

| V | Draft Report   |
|---|----------------|
|   | Revised Report |

Report Date: 12-Jul-17 17:11

## Draft Laboratory Report SC36391

Gulf Oil L.P. 281 Eastern Avenue Chelsea, MA 02150 Attn: Andrew P. Adams

Project: Gulf Terminal - Chelsea, MA

Project #: Gulf Chelsea

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110 Connecticut # PH-0777 Florida # E87936 Maine # MA138 New Hampshire # 2972/2538 New Jersey # MA011 New York # 11393 Pennsylvania # 68-04426/68-02924 Rhode Island # LAO00348 USDA # P330-15-00375 Vermont # VT-11393



Authorized by:

Rebecca Merz Quality Services Manager

Rebecca Mery

Eurofins Spectrum Analytical holds primary NELAC certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 14 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Eurofins Spectrum Analytical, Inc. is currently accredited for the specific method or analyte indicated. Please refer to our Quality'web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Eurofins Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

## **Sample Summary**

Work Order: SC36391

**Project:** Gulf Terminal - Chelsea, MA

**Project Number:** Gulf Chelsea

| <b>Laboratory ID</b> | Client Sample ID | <u>Matrix</u> | <b>Date Sampled</b> | <b>Date Received</b> |
|----------------------|------------------|---------------|---------------------|----------------------|
| SC36391-01           | Chelsea Creek    | Surface Water | 27-Jun-17 10:00     | 28-Jun-17 14:05      |
| SC36392-01           | Outfall 003      | Surface Water | 27-Jun-17 10:00     | 28-Jun-17 14:05      |

#### **CASE NARRATIVE:**

Data has been reported to the MDL. This report includes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the detection limit are reported as "<" (less than) the detection limit in this report.

The samples were received 3.2 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

Analyses for Total Hardness, pH, and Total Residual Chlorine fall under the state of Pennsylvania code Chapter 252.6 accreditation by rule.

Please note this report contains 30 pages of analytical data from New England Boiassay, A division of GZA.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

#### SM 9222D-97

#### Samples:

SC36392-01

Outfall 003

This sample was analyzed outside the EPA recommended holding time per client request.

Fecal Coliforms

#### SW846 8260C

#### Calibration:

#### 1706082

Analyte quantified by quadratic equation type calibration.

Naphthalene

This affected the following samples:

1711116-BLK1

1711116-BLK2

1711116-BS1

1711116-BS2

1711116-BSD1

1711116-BSD2

Chelsea Creek

Outfall 003

S705740-ICV1

S705898-CCV1

#### **Laboratory Control Samples:**

#### 1711116 BS/BSD

Tert-Butanol / butyl alcohol percent recoveries (137/121) are outside individual acceptance criteria (70-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

Outfall 003

#### 1711116 BSD

Ethanol RPD 43% (20%) is outside individual acceptance criteria.

#### SW846 8260C

#### **Laboratory Control Samples:**

1711116 BSD

Tert-Butanol / butyl alcohol RPD 21% (20%) is outside individual acceptance criteria.

## SW846 8270D

#### Calibration:

1706036

Analyte quantified by quadratic equation type calibration.

2,4-Dinitrophenol

4,6-Dinitro-2-methylphenol

This affected the following samples:

1711096-BLK1

1711096-BS1

1711096-BSD1

Outfall 003

S705262-ICV1

S706037-CCV1

S706219-CCV1

#### Samples:

SC36392-01

Outfall 003

Duplicate analysis confirmed surrogate failure due to matrix effects.

2-Fluorophenol

Phenol-d5

SC36392-01RE1

Outfall 003

Duplicate analysis confirmed surrogate failure due to matrix effects.

2-Fluorophenol

Phenol-d5

#### **SW846 8270D SIM**

#### Calibration:

1704025

Analyte quantified by quadratic equation type calibration.

Benzo (a) pyrene

Benzo (b) fluoranthene

Benzo (e) pyrene-d12

Benzo (g,h,i) perylene

Benzo (k) fluoranthene

Dibenzo (a,h) anthracene

Indeno (1,2,3-cd) pyrene

#### **SW846 8270D SIM**

#### Calibration:

#### 1704025

This affected the following samples:

1711096-BLK2

1711096-BS2

1711096-BSD2

Chelsea Creek

Outfall 003

S703654-ICV1

S706180-CCV1

S706181-CCV1

#### Samples:

#### S706180-CCV1

Analyte percent drift is outside individual acceptance criteria (20), but within overall method allowances.

Benzo (k) fluoranthene (24.8%)

This affected the following samples:

1711096-BLK2

1711096-BS2

1711096-BSD2

Chelsea Creek

Outfall 003

## **Sample Acceptance Check Form**

| Project:                  | Gulf Terminal - Chelsea, MA / Gulf Chelsea  |                         |              |            |
|---------------------------|---|-------------------------|--------------|------------|
| Work Order:               | SC36391   |                         |              |            |
| Sample(s) received on:    | 6/28/2017   |                         |              |            |
|                           |   |                         |              |            |
| The following outlines th | ne condition of samples for the attached Chain of Custody upon receipt.   |                         |              |            |
|                           |   | Yes                     | <u>No</u>    | <u>N/A</u> |
| Were custody se           | als present?  |                         | $\checkmark$ |            |
| Were custody se           | als intact?   |                         |              | <b>✓</b>   |
| Were samples re           | ceived at a temperature of $\leq 6^{\circ}$ C?  | <b>✓</b>                |              |            |
| Were samples re           | frigerated upon transfer to laboratory representative?  | <b>✓</b>                |              |            |
| Were sample con           | ntainers received intact?   | ✓                       |              |            |
|                           | operly labeled (labels affixed to sample containers and include sample ID, site project number and the collection date)?  | $\overline{\checkmark}$ |              |            |
| Were samples ac           | companied by a Chain of Custody document?   | $\checkmark$            |              |            |
| include sample I          | ustody document include proper, full, and complete documentation, which shall D, site location, and/or project number, date and time of collection, collector's name, e, sample matrix and any special remarks concerning the sample? | $\overline{C}$          |              |            |
| Did sample cont           | ainer labels agree with Chain of Custody document?  | $\checkmark$            |              |            |
| Were samples re           | ceived within method-specific holding times?  | <b>~</b>                |              |            |

Client:

Gulf Oil L.P.

## **Sample Acceptance Check Form**

| Project:                  | Gulf Terminal - Chelsea, MA / Gulf Chelsea  |              |              |              |
|---------------------------|---|--------------|--------------|--------------|
| Work Order:               | SC36392   |              |              |              |
| Sample(s) received on:    | 6/28/2017   |              |              |              |
|                           |   |              |              |              |
| The following outlines th | ne condition of samples for the attached Chain of Custody upon receipt.   |              |              |              |
|                           |   | Yes          | No           | <u>N/A</u>   |
| Were custody se           | als present?  |              | $\checkmark$ |              |
| Were custody se           | als intact?   |              |              | $\checkmark$ |
| Were samples re           | ceived at a temperature of $\leq 6^{\circ}$ C?  | <b>✓</b>     |              |              |
| Were samples re           | frigerated upon transfer to laboratory representative?  | $\checkmark$ |              |              |
| Were sample con           | ntainers received intact?   | $\checkmark$ |              |              |
|                           | operly labeled (labels affixed to sample containers and include sample ID, site project number and the collection date)?  |              |              |              |
| Were samples ac           | companied by a Chain of Custody document?   | $\checkmark$ |              |              |
| include sample I          | ustody document include proper, full, and complete documentation, which shall D, site location, and/or project number, date and time of collection, collector's name, e, sample matrix and any special remarks concerning the sample? |              |              |              |
| Did sample cont           | ainer labels agree with Chain of Custody document?  | <b>✓</b>     |              |              |
| Were samples re           | ceived within method-specific holding times?  | $\checkmark$ |              |              |

Client:

Gulf Oil L.P.

## **Summary of Hits**

**Lab ID:** SC36391-01

Client ID: Chelsea Creek

| Parameter                 | Result | Flag | Reporting Limit        | Units      | Analytical Method        |
|---------------------------|--------|------|------------------------|------------|--------------------------|
| Ammonia as Nitrogen       | 0.10   |      | 0.05                   | mg/L       | E350.1                   |
| Salinity                  | 24.6   |      | 1.00                   | ppt (1000) | SM 2520 (01)             |
| Total Solids              | 29000  |      | 100                    | mg/l       | SM2540 B (11)            |
| Total Suspended Solids    | 9.0    |      | 0.8                    | mg/l       | SM2540D (11)             |
| Total Residual Chlorine   | 0.028  |      | 0.020                  | mg/l       | SM4500-Cl-G (11)         |
| Total Organic Carbon      | 3.28   |      | 1.00                   | mg/l       | SM5310B (00, 11)         |
| <b>Lab ID:</b> SC36392-01 |        |      | Client ID: Outfall 003 |            |                          |
| Parameter                 | Result | Flag | Reporting Limit        | Units      | <b>Analytical Method</b> |

0.05 E350.1 Ammonia as Nitrogen 0.26 mg/L**Total Solids** 488 5.00 mg/lSM2540 B (11) Total Suspended Solids 10.3 0.8 SM2540D (11) mg/l Total Residual Chlorine 0.066 0.020 mg/lSM4500-Cl-G (11) Total Organic Carbon 7.18 1.00 mg/l SM5310B (00, 11)

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

| Chelsea (<br>SC36391- |  |  |      | Client Pr<br>Gulf Cl |       |       | Matrix<br>Surface Wa |                         | ection Date<br>7-Jun-17 10 |                    |         | Jun-17  |      |
|-----------------------|--|--|------|----------------------|-------|-------|----------------------|-------------------------|----------------------------|--------------------|---------|---------|------|
| CAS No.               | Analyte(s)   | Result                                   | Flag | Units                | *RDL  | MDL   | Dilution             | Method Ref.             | Prepared                   | Analyzed           | Analyst | Batch   | Cert |
| Volatile O            | rganic Compounds   |  |      |                      |       |       |                      |                         |                            |                    |         |         |      |
|                       | rganic Aromatics by SW84<br>by method SW846 5030 V       |  |      |                      |       |       |                      |                         |                            |                    |         |         |      |
| 71-43-2               | Benzene  | < 1.0                                    |      | μg/l                 | 1.0   | 0.3   | 1                    | SW846 8260C             | 30-Jun-17                  | 30-Jun-17          | GMA     | 1711116 | X    |
| 100-41-4              | Ethylbenzene   | < 1.0                                    |      | μg/l                 | 1.0   | 0.3   | 1                    | "                       | "                          | "                  | "       | "       | Х    |
| 91-20-3               | Naphthalene  | < 1.0                                    |      | μg/l                 | 1.0   | 0.4   | 1                    | "                       | "                          | "                  | "       | "       | Х    |
| 108-88-3              | Toluene  | < 1.0                                    |      | μg/l                 | 1.0   | 0.3   | 1                    | "                       | "                          | "                  | "       | "       | Х    |
| 179601-23-1           | m,p-Xylene   | < 2.0                                    |      | μg/l                 | 2.0   | 0.4   | 1                    | "                       | "                          | "                  | "       | "       | Х    |
| 95-47-6               | o-Xylene   | < 1.0                                    |      | μg/l                 | 1.0   | 0.3   | 1                    | "                       | "                          | "                  | "       | "       | Х    |
| Surrogate i           | recoveries:  |  |      |                      |       |       |                      |                         |                            |                    |         |         |      |
| 460-00-4              | 4-Bromofluorobenzene                                     | 103                                      |      |                      | 70-13 | 0 %   |                      | "                       | "                          | "                  | "       | "       |      |
| 2037-26-5             | Toluene-d8   | 103                                      |      |                      | 70-13 | 0 %   |                      | "                       | "                          | "                  | "       | "       |      |
| 17060-07-0            | 1,2-Dichloroethane-d4                                    | 103                                      |      |                      | 70-13 | 0 %   |                      | "                       | "                          | "                  | "       | "       |      |
| 1868-53-7             | Dibromofluoromethane                                     | 102                                      |      |                      | 70-13 | 0 %   |                      | "                       | "                          | "                  | "       | "       |      |
| Semivolati            | ile Organic Compounds by                                 | GCMS                                     |      |                      |       |       |                      |                         |                            |                    |         |         |      |
| SVOCs by              | <u>y SIM</u>   |  |      |                      |       |       |                      |                         |                            |                    |         |         |      |
| Prepared              | by method SW846 3510C                                    | <u>.</u>                                 |      |                      |       |       |                      |                         |                            |                    |         |         |      |
| 33-32-9               | Acenaphthene   | < 0.049                                  |      | μg/l                 | 0.049 | 0.007 | 1                    | SW846 8270D<br>SIM      | 30-Jun-17                  | 10-Jul-17          | MSL     | 1711096 | X    |
| 108-96-8              | Acenaphthylene   | < 0.049                                  |      | μg/l                 | 0.049 | 0.013 | 1                    | "                       | "                          | "                  | "       | "       | Χ    |
| 20-12-7               | Anthracene   | < 0.049                                  |      | μg/l                 | 0.049 | 0.008 | 1                    | "                       | "                          | "                  | "       | "       | Χ    |
| 6-55-3                | Benzo (a) anthracene                                     | < 0.049                                  |      | μg/l                 | 0.049 | 0.017 | 1                    | "                       | "                          | "                  | "       | "       | Χ    |
| 50-32-8               | Benzo (a) pyrene   | < 0.049                                  |      | μg/l                 | 0.049 | 0.020 | 1                    | "                       | "                          | u                  | "       | "       | Χ    |
| 205-99-2              | Benzo (b) fluoranthene                                   | < 0.049                                  |      | μg/l                 | 0.049 | 0.020 | 1                    | "                       | "                          | "                  | "       | "       | Χ    |
| 191-24-2              | Benzo (g,h,i) perylene                                   | < 0.049                                  |      | μg/l                 | 0.049 | 0.019 | 1                    | "                       | "                          | "                  | "       | "       | Χ    |
| 207-08-9              | Benzo (k) fluoranthene                                   | < 0.049                                  |      | μg/l                 | 0.049 | 0.018 | 1                    | "                       | "                          | "                  | "       | "       | Χ    |
| 218-01-9              | Chrysene   | < 0.049                                  |      | μg/l                 | 0.049 | 0.005 | 1                    | "                       | "                          | "                  | "       | "       | Χ    |
| 53-70-3               | Dibenzo (a,h) anthracene                                 | < 0.049                                  |      | μg/l                 | 0.049 | 0.018 | 1                    | "                       | "                          | "                  | "       | "       | Х    |
| 206-44-0              | Fluoranthene   | < 0.049                                  |      | μg/l                 | 0.049 | 0.004 | 1                    | "                       | "                          | "                  | "       | "       | Χ    |
| 86-73-7               | Fluorene   | < 0.049                                  |      | μg/l                 | 0.049 | 0.012 | 1                    | "                       | "                          | "                  | "       | "       | Χ    |
| 193-39-5              | Indeno (1,2,3-cd) pyrene                                 | < 0.049                                  |      | μg/l                 | 0.049 | 0.021 | 1                    | "                       | "                          | "                  | "       | "       | Χ    |
| 91-20-3               | Naphthalene  | < 0.049                                  |      | μg/l                 | 0.049 | 0.021 | 1                    | "                       | "                          | "                  | "       | "       | Χ    |
| 85-01-8               | Phenanthrene   | < 0.049                                  |      | μg/l                 | 0.049 | 0.008 | 1                    | "                       | "                          | "                  | "       | "       | Χ    |
| 129-00-0              | Pyrene   | < 0.049                                  |      | μg/l                 | 0.049 | 0.006 | 1                    | "                       | "                          | "                  | "       | "       | Х    |
| Surrogate i           | recoveries:  |  |      |                      |       |       |                      |                         |                            |                    |         |         |      |
| 205440-82-0           | Benzo (e) pyrene-d12                                     | 69                                       |      |                      | 30-13 | 0 %   |                      | "                       | "                          | "                  | "       | "       |      |
|                       | als by EPA 200/6000 Series I<br>by method General Prep-I |  |      |                      |       |       |                      |                         |                            |                    |         |         |      |
|                       | Preservation   | Field<br>Preserved;<br>pH<2<br>confirmed |      | N/A                  |       |       | 1                    | EPA 200/6000<br>methods | 28-Jun-17                  |                    | AAW     | 1710965 | ı    |
| General C             | hemistry Parameters                                      |  |      |                      |       |       |                      |                         |                            |                    |         |         |      |
| 782-50-5              | Total Residual Chlorine                                  | 0.028                                    | CIHT | mg/l                 | 0.020 | 0.006 | 1                    | SM4500-CI-G<br>(11)     | 30-Jun-17<br>09:38         | 05-Jul-17<br>11:27 | RLT     | 1711119 |      |
|                       | рН   | 7.92                                     | рН   | pH Units             |       |       | 1                    | ASTM D<br>1293-99B      | 28-Jun-17<br>10:00         | 29-Jun-17<br>14:20 | TN      | 1710957 |      |
|                       | Salinity   | 24.6                                     |      | ppt (1000)           | 1.00  | 0.144 | 1                    | SM 2520 (01)            | 06-Jul-17                  | 06-Jul-17          | BD      | 1711426 | i    |
|                       | Total Solids   | 29,000                                   | LIV  | mg/l                 | 100   | 30.6  | 1                    | SM2540 B (11)           | 29-Jun-17                  | 05-Jul-17          | СМВ     | 1711007 | ×    |
|                       | Total Suspended Solids                                   | 9.0                                      |      | mg/l                 | 0.8   | 0.4   | 1                    | SM2540D (11)            | 29-Jun-17                  | 30- Jun-17         | СМВ     | 1711008 | ×    |

| Sample Id<br>Chelsea (<br>SC36391 |                                 |                    |              |          | Project #<br>Chelsea |       | <u>Matrix</u><br>Surface W | · · · · · · · · · · · · · · · · · · · | ection Date<br>-Jun-17 10 |                    |         | <u>ceived</u><br>Jun-17 |       |
|-----------------------------------|---------------------------------|--------------------|--------------|----------|----------------------|-------|----------------------------|---------------------------------------|---------------------------|--------------------|---------|-------------------------|-------|
| CAS No.                           | Analyte(s)                      | Result             | Flag         | Units    | *RDL                 | MDL   | Dilution                   | Method Ref.                           | Prepared                  | Analyzed           | Analyst | Batch                   | Cert. |
| General C                         | Chemistry Parameters            |                    |              |          |                      |       |                            |                                       |                           |                    |         |                         |       |
|                                   | Total Organic Carbon            | 3.28               |              | mg/l     | 1.00                 | 0.246 | 1                          | SM5310B (00,<br>11)                   | 07-Jul-17                 | 07-Jul-17          | RLT     | 1711573                 | Х     |
|                                   | acted Analyses<br>by method NA  |                    |              |          |                      |       |                            |                                       |                           |                    |         |                         |       |
| Analysis p                        | erformed by GZA Geoenvird       | onmental, Inc Me   | anchester, C | $CT^*$ - |                      |       |                            |                                       |                           |                    |         |                         |       |
|                                   | Aquatic Toxicity                | See Report         |              | N/A      |                      |       | 1                          | EPA-821-R-02-0<br>12                  |                           |                    |         | '[none]'                |       |
|                                   | octed Analyses by method 392124 |                    |              |          |                      |       |                            |                                       |                           |                    |         |                         |       |
| Analysis p                        | erformed by Phoenix Enviro      | onmental Labs, Inc | . * - MACT   | 007      |                      |       |                            |                                       |                           |                    |         |                         |       |
| 7664-41-7                         | Ammonia as Nitrogen             | 0.10               |              | mg/L     | 0.05                 | 0.05  | 1                          | E350.1                                | "                         | 03-Jul-17<br>10:38 | MACT0   | 392124A                 |       |

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| Sample Id Outfall 00 SC36392- |  |         |      |       | Project #<br>Chelsea |       | <u>Matrix</u><br>Surface Wa |              | ection Date<br>'-Jun-17 10 |           |           | <u>ceived</u><br>Jun-17 |       |
|-------------------------------|--|---------|------|-------|----------------------|-------|-----------------------------|--------------|----------------------------|-----------|-----------|-------------------------|-------|
| CAS No.                       | Analyte(s)                                       | Result  | Flag | Units | *RDL                 | MDL   | Dilution                    | Method Ref.  | Prepared                   | Analyzed  | Analyst   | Batch                   | Cert. |
| Volatile Or                   | ganic Compounds                                  |         |      |       |                      |       |                             |              |                            |           |           |                         |       |
|                               | rganic Compounds by SW8                          |         |      |       |                      |       |                             |              |                            |           |           |                         |       |
| 71-43-2                       | by method SW846 5030 W<br>Benzene                | < 1.00  |      | μg/l  | 1.00                 | 0.28  | 1                           | SW846 8260C  | 30- lun-17                 | 30-Jun-17 | GMA       | 1711116                 | Х     |
| 100-41-4                      | Ethylbenzene                                     | < 1.00  |      | μg/l  | 1.00                 | 0.33  | 1                           | "            | "                          | "         | "         | "                       | X     |
| 1634-04-4                     | Methyl tert-butyl ether                          | < 1.00  |      | μg/l  | 1.00                 | 0.24  | 1                           | "            | "                          |           | "         | "                       | X     |
| 91-20-3                       | Naphthalene                                      | < 1.00  |      | μg/l  | 1.00                 | 0.35  | 1                           | "            | "                          | ,,        | "         |                         | X     |
| 108-88-3                      | Toluene  | < 1.00  |      | μg/l  | 1.00                 | 0.30  | 1                           | "            | "                          | "         | "         |                         | X     |
| 75-01-4                       | Vinyl chloride                                   | < 1.00  |      |       | 1.00                 | 0.47  | 1                           | "            | "                          | "         |           |                         | X     |
| 179601-23-1                   | •  | < 2.00  |      | µg/l  | 2.00                 | 0.38  | 1                           | "            | "                          | "         |           |                         | X     |
| 95-47-6                       | <i>'</i> ' <i>y</i>                              | < 1.00  |      | μg/l  |                      |       |                             |              |                            |           | "         |                         |       |
| 75-65-0                       | o-Xylene   |         |      | μg/l  | 1.00                 | 0.28  | 1                           |              |                            |           | "         |                         | X     |
|                               | Tert-Butanol / butyl alcohol                     | < 10.0  |      | μg/l  | 10.0                 | 5.90  | 1                           | "            |                            |           | "         | "                       | X     |
| 64-17-5                       | Ethanol  | < 200   |      | μg/l  | 200                  | 30.9  | 1                           |              |                            |           |           |                         | X     |
| Surrogate r                   | recoveries:                                      |         |      |       |                      |       |                             |              |                            |           |           |                         |       |
| 460-00-4                      | 4-Bromofluorobenzene                             | 101     |      |       | 70-13                | 0 %   |                             | "            | "                          | "         | "         | "                       |       |
| 2037-26-5                     | Toluene-d8                                       | 103     |      |       | 70-13                | 0 %   |                             | "            | "                          | "         | "         | "                       |       |
| 17060-07-0                    | 1,2-Dichloroethane-d4                            | 102     |      |       | 70-13                | 0 %   |                             | "            | "                          | "         | "         | "                       |       |
| 1868-53-7                     | Dibromofluoromethane                             | 105     |      |       | 70-13                | 0 %   |                             | "            | "                          | "         | "         | "                       |       |
| Semivolati                    | le Organic Compounds by C                        | GCMS    |      |       |                      |       |                             |              |                            |           |           |                         |       |
|                               | ictables/Phenols                                 |         |      |       |                      |       |                             |              |                            |           |           |                         |       |
| <u>Prepared</u> 108-95-2      | by method SW846 3510C                            | < 0.645 |      | /1    | F 00                 | 0.645 | 4                           | SW846 8270D  | 30-Jun-17                  | 04 1 17   | MCI       | 1711006                 | V     |
| 100-93-2                      | Phenol   | < 0.645 | U    | μg/l  | 5.00                 | 0.645 | 1                           | 3VV040 02/UD | 30-Jun-17                  | 04-Jul-17 | MSL       | 1711096                 |       |
| Surrogate r                   |  |         |      |       |                      |       |                             |              |                            |           |           |                         |       |
| 367-12-4                      | 2-Fluorophenol                                   | 7       | SDUP |       | 15-11                |       |                             | "            | "                          | "         | "         | "                       |       |
| 4165-62-2                     | Phenol-d5  | 12      | SDUP |       | 15-11                | 0 %   |                             | "            | "                          | "         | "         | "                       |       |
|                               | is of Acid Extractables/Phe                      | enols   |      |       |                      |       |                             |              |                            |           |           |                         |       |
| 59-50-7                       | by method SW846 3510C<br>4-Chloro-3-methylphenol | < 0.501 | U    | μg/l  | 5.00                 | 0.501 | 1                           | SW846 8270D  | 30-Jun-17                  | 12 Jul 17 | MSL       | 1711096                 | X     |
| 95-57-8                       | 2-Chlorophenol                                   | < 0.748 | U    | μg/l  | 5.00                 | 0.748 | 1                           | "            | 30-Juli-17                 | 12-Jul-17 | WISE<br>" | "                       | X     |
| 120-83-2                      | 2,4-Dichlorophenol                               | < 0.748 | U    |       | 5.00                 | 0.530 |                             |              |                            |           | "         |                         | X     |
| 105-67-9                      | 2,4-Dimethylphenol                               | < 0.653 |      | μg/l  | 5.00                 | 0.653 | 1<br>1                      |              |                            |           | "         |                         | X     |
| 534-52-1                      | 4,6-Dinitro-2-methylphenol                       | < 0.319 | U    | μg/l  | 5.00                 | 0.033 | 1                           |              | "                          |           |           |                         | X     |
| 51-28-5                       | 2,4-Dinitrophenol                                | < 0.561 | U    | μg/l  | 5.00                 | 0.561 | 1                           |              |                            |           | "         |                         | X     |
| 95-48-7                       | 2-Methylphenol                                   | < 0.665 | U    | μg/l  | 5.00                 |       |                             |              |                            |           | "         |                         |       |
|                               | • •  |         | U    | μg/l  |                      | 0.665 | 1                           |              |                            |           | "         | "                       | X     |
| 108-39-4,<br>106-44-5         | 3 & 4-Methylphenol                               | < 0.615 | U    | μg/l  | 10.0                 | 0.615 | 1                           |              |                            |           |           | -                       | Х     |
| 88-75-5                       | 2-Nitrophenol                                    | < 0.465 | U    | μg/l  | 5.00                 | 0.465 | 1                           | "            | "                          | "         | "         | "                       | Х     |
| 100-02-7                      | 4-Nitrophenol                                    | < 0.838 | U    | μg/l  | 5.00                 | 0.838 | 1                           | "            | "                          | "         | "         | "                       | Х     |
| 87-86-5                       | Pentachlorophenol                                | < 0.373 | U    | μg/l  | 5.00                 | 0.373 | 1                           | "            | "                          | "         | "         | "                       | Х     |
| 108-95-2                      | Phenol   | < 0.645 | U    | μg/l  | 5.00                 | 0.645 | 1                           | "            | "                          | "         | "         | "                       | Х     |
| 95-95-4                       | 2,4,5-Trichlorophenol                            | < 0.520 | U    | μg/l  | 5.00                 | 0.520 | 1                           | "            | "                          | "         | "         | "                       | Х     |
| 88-06-2                       | 2,4,6-Trichlorophenol                            | < 0.518 | U    | μg/l  | 5.00                 | 0.518 | 1                           | "            | "                          | "         | "         | "                       | Х     |
| Surrogate r                   | recoveries:                                      |         |      |       |                      |       |                             |              |                            |           |           |                         |       |
| 367-12-4                      | 2-Fluorophenol                                   | 7       | SDUP |       | 15-11                | 0 %   |                             | "            | "                          | "         | "         | "                       |       |
| 4165-62-2                     | Phenol-d5  | 11      | SDUP |       | 15-11                |       |                             | "            | "                          | "         | "         | "                       |       |
| SVOCs by                      |  |         |      |       |                      |       |                             |              |                            |           |           |                         |       |

| Outfall 00<br>SC36392-   |   |  |                             | Client Pr<br>Gulf Cl  |                              |                               | <u>Matrix</u><br>Surface W | ·  | ection Date<br>7-Jun-17 10  |   |                                 | <u>ceived</u><br>Jun-17  |             |
|--|---|--|-----------------------------|---|------------------------------|-------------------------------|----------------------------|--|---|---|---------------------------------|--|-------------|
| CAS No.  | Analyte(s)  | Result   | Flag                        | Units   | *RDL                         | MDL                           | Dilution                   | Method Ref.  | Prepared  | Analyzed  | Analyst                         | Batch  | Cert        |
| Semivolati   | ile Organic Compounds by  | GCMS   |                             |   |                              |                               |                            |  |   |   |                                 |  |             |
| SVOCs by   |   |  |                             |   |                              |                               |                            |  |   |   |                                 |  |             |
|  | by method SW846 3510C   | <u> </u>   |                             |   |                              |                               |                            |  |   |   |                                 |  |             |
| 83-32-9  | Acenaphthene  | < 0.050  |                             | μg/l  | 0.050                        | 0.007                         | 1                          | SW846 8270D<br>SIM   | 30-Jun-17   | 10-Jul-17   | MSL                             | 1711096  | Х           |
| 208-96-8   | Acenaphthylene  | < 0.050  |                             | μg/l  | 0.050                        | 0.013                         | 1                          | "  | "   | "   | "                               | "  | Х           |
| 120-12-7   | Anthracene  | < 0.050  |                             | μg/l  | 0.050                        | 0.008                         | 1                          | "  | "   | "   | "                               | "  | Х           |
| 56-55-3  | Benzo (a) anthracene  | < 0.050  |                             | μg/l  | 0.050                        | 0.017                         | 1                          | "  | "   | "   | "                               | "  | Х           |
| 50-32-8  | Benzo (a) pyrene  | < 0.050  |                             | μg/l  | 0.050                        | 0.020                         | 1                          | "  | "   | "   | "                               | "  | Х           |
| 205-99-2   | Benzo (b) fluoranthene  | < 0.050  |                             | μg/l  | 0.050                        | 0.020                         | 1                          | "  | "   | "   | "                               | "  | Х           |
| 191-24-2   | Benzo (g,h,i) perylene  | < 0.050  |                             | μg/l  | 0.050                        | 0.019                         | 1                          |  | "   | "   |                                 | "  | Х           |
| 207-08-9   | Benzo (k) fluoranthene  | < 0.050  |                             | μg/l  | 0.050                        | 0.019                         | 1                          |  | "   |   | "                               | "  | Х           |
| 218-01-9   | Chrysene  | < 0.050  |                             | μg/l  | 0.050                        | 0.005                         | 1                          | "  |   | "   | "                               | "  | X           |
| 53-70-3  | Dibenzo (a,h) anthracene  | < 0.050  |                             | μg/l  | 0.050                        | 0.003                         | 1                          | "  | "   |   | "                               | "  | X           |
| 206-44-0   | Fluoranthene  | < 0.050  |                             |   | 0.050                        | 0.004                         | 1                          | "  | "   | "   | "                               | "  | X           |
| 86-73-7  | Fluorene  | < 0.050  |                             | μg/l  | 0.050                        | 0.004                         | 1                          | ,,   |   |   |                                 |  | X           |
| 193-39-5   |   |  |                             | μg/l  |                              | 0.012                         |                            | ,,   |   |   |                                 |  | X           |
| 91-20-3  | Indeno (1,2,3-cd) pyrene  | < 0.050  |                             | μg/l  | 0.050                        |                               | 1                          | "  |   |   |                                 |  |             |
| 85-01-8  | Naphthalene   | < 0.050  |                             | μg/l  | 0.050                        | 0.022                         | 1                          | "  |   |   | "                               | "  | X           |
|  | Phenanthrene  | < 0.050  |                             | μg/l  | 0.050                        | 0.008                         | 1                          |  |   |   |                                 |  | X           |
| 129-00-0   | Pyrene  | < 0.050  |                             | µg/l  | 0.050                        | 0.007                         | 1                          | <u>"</u>   |   |   |                                 |  | X           |
|  | Benzo (e) pyrene-d12  | 60<br>M. d. D.   |                             |   | 30-13                        | 0 %                           |                            | 11   | "   | "   | "                               | "  |             |
| 205440-82-0  |   | Methods  |                             | N/A   | 30-13                        | 0 %                           | 1                          | EPA 200/6000<br>methods  | "<br>28-Jun-17  |   |                                 | 1710965  |             |
| 205440-82-0<br>Total Meta<br>Prepared  | Benzo (e) pyrene-d12<br>als by EPA 200/6000 Series<br>by method General Prep-   | Methods  Metal  Field  Preserved; pH<2   |                             | N/A   | 30-13                        | 0 %                           | 1                          |  | "<br>28-Jun-17  |   |                                 |  |             |
| 205440-82-0 Total Meta Prepared General C  | Benzo (e) pyrene-d12 als by EPA 200/6000 Series by method General Prep- Preservation  | Methods  Metal  Field  Preserved; pH<2   | CIHT                        | N/A<br>mg/l   | <i>30-13</i>                 | 0.006                         | 1                          |  | "<br>28-Jun-17<br>30-Jun-17<br>09:38  | "<br>05-Jul-17<br>11:35   |                                 |  |             |
| 205440-82-0<br>Total Meta<br>Prepared  | als by EPA 200/6000 Series by method General Prep-<br>Preservation  hemistry Parameters   | Methods Metal  Field Preserved; pH<2 confirmed   | CIHT<br>pH                  |   |                              |                               |                            | methods<br>SM4500-CI-G   | 30-Jun-17   | 11:35   | AAW                             | 1710965  |             |
| 205440-82-0 Total Meta Prepared General C  | als by EPA 200/6000 Series by method General Prep- Preservation  hemistry Parameters Total Residual Chlorine  | Methods Metal  Field Preserved; pH<2 confirmed  0.066  |                             | mg/l  |                              |                               | 1                          | methods  SM4500-CI-G (11)  ASTM D  | 30-Jun-17<br>09:38<br>28-Jun-17<br>10:00  | 11:35<br>29-Jun-17  | AAW<br>RLT                      | 1710965<br>1711119   |             |
| 205440-82-0 Total Meta Prepared General C  | als by EPA 200/6000 Series by method General Prep- Preservation  hemistry Parameters Total Residual Chlorine pH   | Methods Metal  Field Preserved; pH<2 confirmed  0.066  8.01                                    |                             | mg/l<br>pH Units  | 0.020                        | 0.006                         | 1                          | methods  SM4500-CI-G (11)  ASTM D 1293-99B   | 30-Jun-17<br>09:38<br>28-Jun-17<br>10:00  | 11:35<br>29-Jun-17<br>14:20<br>06-Jul-17  | AAW<br>RLT<br>TN                | 1710965<br>1711119<br>1710957  |             |
| 205440-82-0 Total Meta Prepared General C  | als by EPA 200/6000 Series by method General Prep- Preservation  hemistry Parameters Total Residual Chlorine pH Salinity  | Methods Metal Field Preserved; pH<2 confirmed  0.066  8.01 < 1.00                              |                             | mg/l pH Units ppt (1000)                                      | 0.020                        | 0.006                         | 1<br>1<br>1                | methods  SM4500-CI-G (11)  ASTM D 1293-99B  SM 2520 (01)   | 30-Jun-17<br>09:38<br>28-Jun-17<br>10:00<br>06-Jul-17<br>29-Jun-17              | 11:35<br>29-Jun-17<br>14:20<br>06-Jul-17  | AAW RLT TN BD CMB               | 1710965<br>1711119<br>1710957<br>1711426   | X           |
| 205440-82-0 Total Meta Prepared General C  | als by EPA 200/6000 Series by method General Prep- Preservation  hemistry Parameters Total Residual Chlorine pH Salinity Total Solids   | Methods Metal Field Preserved; pH<2 confirmed  0.066  8.01 < 1.00 488                          |                             | mg/l pH Units ppt (1000) mg/l                                 | 0.020<br>1.00<br>5.00        | 0.006<br>0.144<br>1.53        | 1<br>1<br>1<br>1           | methods  SM4500-CI-G (11)  ASTM D 1293-99B  SM 2520 (01)  SM2540 B (11)  | 30-Jun-17<br>09:38<br>28-Jun-17<br>10:00<br>06-Jul-17<br>29-Jun-17              | 11:35<br>29-Jun-17<br>14:20<br>06-Jul-17<br>05-Jul-17                           | AAW RLT TN BD CMB               | 1710965<br>1711119<br>1710957<br>1711426<br>1711007                                  | x<br>x      |
| 205440-82-0 Total Meta Prepared  General C 7782-50-5   | als by EPA 200/6000 Series by method General Prep- Preservation  hemistry Parameters Total Residual Chlorine pH Salinity Total Solids Total Suspended Solids  | Methods Metal Field Preserved; pH<2 confirmed  0.066  8.01 < 1.00 488 10.3                     |                             | mg/l pH Units ppt (1000) mg/l mg/l                            | 0.020<br>1.00<br>5.00<br>0.8 | 0.006<br>0.144<br>1.53<br>0.4 | 1<br>1<br>1<br>1           | methods  SM4500-CI-G (11)  ASTM D 1293-99B  SM 2520 (01)  SM2540 B (11)  SM2540D (11)  SM5310B (00,                  | 30-Jun-17<br>09:38<br>28-Jun-17<br>10:00<br>06-Jul-17<br>29-Jun-17              | 11:35<br>29-Jun-17<br>14:20<br>06-Jul-17<br>05-Jul-17<br>30-Jun-17              | AAW  RLT  TN  BD  CMB  CMB      | 1710965<br>1711119<br>1710957<br>1711426<br>1711007<br>1711008                       | x<br>x      |
| 205440-82-0 Total Meta Prepared  General C 7782-50-5   | als by EPA 200/6000 Series by method General Prep- Preservation  hemistry Parameters Total Residual Chlorine pH Salinity Total Solids Total Suspended Solids Total Organic Carbon   | Methods Metal Field Preserved; pH<2 confirmed  0.066  8.01 < 1.00 488 10.3                     |                             | mg/l pH Units ppt (1000) mg/l mg/l                            | 0.020<br>1.00<br>5.00<br>0.8 | 0.006<br>0.144<br>1.53<br>0.4 | 1<br>1<br>1<br>1           | methods  SM4500-CI-G (11)  ASTM D 1293-99B  SM 2520 (01)  SM2540 B (11)  SM2540D (11)  SM5310B (00,                  | 30-Jun-17<br>09:38<br>28-Jun-17<br>10:00<br>06-Jul-17<br>29-Jun-17              | 11:35<br>29-Jun-17<br>14:20<br>06-Jul-17<br>05-Jul-17<br>30-Jun-17              | AAW  RLT  TN  BD  CMB  CMB      | 1710965<br>1711119<br>1710957<br>1711426<br>1711007<br>1711008                       | X<br>X<br>X |
| 205440-82-0 Total Meta Prepared  General C 7782-50-5  Microbiolo Subcontra                                 | als by EPA 200/6000 Series by method General Prep- Preservation  hemistry Parameters Total Residual Chlorine pH Salinity Total Solids Total Suspended Solids Total Organic Carbon   | Methods Metal Field Preserved; pH<2 confirmed  0.066  8.01 <1.00 488 10.3 7.18                 | рН                          | mg/l pH Units ppt (1000) mg/l mg/l mg/l                       | 0.020<br>1.00<br>5.00<br>0.8 | 0.006<br>0.144<br>1.53<br>0.4 | 1<br>1<br>1<br>1<br>1      | methods  SM4500-CI-G (11)  ASTM D 1293-99B  SM 2520 (01)  SM2540 B (11)  SM2540D (11)  SM5310B (00, 11)              | 30-Jun-17<br>09:38<br>28-Jun-17<br>10:00<br>06-Jul-17<br>29-Jun-17<br>07-Jul-17 | 11:35<br>29-Jun-17<br>14:20<br>06-Jul-17<br>05-Jul-17<br>30-Jun-17<br>07-Jul-17 | AAW  RLT  TN  BD  CMB  CMB  RLT | 1710965<br>1711119<br>1710957<br>1711426<br>1711007<br>1711008<br>1711573            | X<br>X<br>X |
| 205440-82-0 Total Meta Prepared  General C 7782-50-5  Microbiolo Subcontra Prepared                        | als by EPA 200/6000 Series by method General Prep- Preservation  hemistry Parameters Total Residual Chlorine pH Salinity Total Solids Total Suspended Solids Total Organic Carbon  ogical Analyses Fecal Coliforms  cted Analyses   | Methods Metal Field Preserved; pH<2 confirmed  0.066  8.01 < 1.00 488 10.3 7.18                | pH<br>O09, D                | mg/l pH Units ppt (1000) mg/l mg/l mg/l CFU/100 ml            | 0.020<br>1.00<br>5.00<br>0.8 | 0.006<br>0.144<br>1.53<br>0.4 | 1<br>1<br>1<br>1<br>1      | methods  SM4500-CI-G (11)  ASTM D 1293-99B  SM 2520 (01)  SM2540 B (11)  SM2540D (11)  SM5310B (00, 11)              | 30-Jun-17<br>09:38<br>28-Jun-17<br>10:00<br>06-Jul-17<br>29-Jun-17<br>07-Jul-17 | 11:35<br>29-Jun-17<br>14:20<br>06-Jul-17<br>05-Jul-17<br>30-Jun-17<br>07-Jul-17 | AAW  RLT  TN  BD  CMB  CMB  RLT | 1710965<br>1711119<br>1710957<br>1711426<br>1711007<br>1711008<br>1711573            | X<br>X<br>X |
| 205440-82-0 Total Meta Prepared  General C 7782-50-5  Microbiolo Subcontra Prepared                        | als by EPA 200/6000 Series by method General Prep- Preservation  hemistry Parameters Total Residual Chlorine pH Salinity Total Solids Total Suspended Solids Total Organic Carbon  ogical Analyses Fecal Coliforms  cted Analyses by method NA  | Methods Metal Field Preserved; pH<2 confirmed  0.066  8.01 < 1.00 488 10.3 7.18                | pH<br>O09, D                | mg/l pH Units ppt (1000) mg/l mg/l mg/l CFU/100 ml            | 0.020<br>1.00<br>5.00<br>0.8 | 0.006<br>0.144<br>1.53<br>0.4 | 1<br>1<br>1<br>1<br>1      | methods  SM4500-CI-G (11)  ASTM D 1293-99B  SM 2520 (01)  SM2540 B (11)  SM2540D (11)  SM5310B (00, 11)              | 30-Jun-17<br>09:38<br>28-Jun-17<br>10:00<br>06-Jul-17<br>29-Jun-17<br>07-Jul-17 | 11:35<br>29-Jun-17<br>14:20<br>06-Jul-17<br>05-Jul-17<br>30-Jun-17<br>07-Jul-17 | AAW  RLT  TN  BD  CMB  CMB  RLT | 1710965<br>1711119<br>1710957<br>1711426<br>1711007<br>1711008<br>1711573            | X<br>X<br>X |
| 205440-82-0 Total Meta Prepared  General C 7782-50-5  Microbiolo Subcontra Prepared Analysis per Subcontra | als by EPA 200/6000 Series by method General Prep- Preservation  hemistry Parameters Total Residual Chlorine pH Salinity Total Solids Total Suspended Solids Total Organic Carbon  ogical Analyses Fecal Coliforms  ceted Analyses by method NA erformed by GZA Geoenviror                                  | Methods Metal Field Preserved; pH<2 confirmed  0.066  8.01 <1.00 488 10.3 7.18  124            | pH<br>O09, D                | mg/l pH Units ppt (1000) mg/l mg/l mg/l CFU/100 ml            | 0.020<br>1.00<br>5.00<br>0.8 | 0.006<br>0.144<br>1.53<br>0.4 | 1<br>1<br>1<br>1<br>1<br>1 | methods  SM4500-CI-G (11)  ASTM D 1293-99B  SM 2520 (01)  SM2540 B (11)  SM2540D (11)  SM5310B (00, 11)  SM 9222D-97 | 30-Jun-17<br>09:38<br>28-Jun-17<br>10:00<br>06-Jul-17<br>29-Jun-17<br>07-Jul-17 | 11:35<br>29-Jun-17<br>14:20<br>06-Jul-17<br>05-Jul-17<br>30-Jun-17<br>07-Jul-17 | AAW  RLT  TN  BD  CMB  CMB  RLT | 1710965<br>1711119<br>1710957<br>1711426<br>1711007<br>1711008<br>1711573<br>1710945 | X<br>X<br>X |
| 205440-82-0 Total Meta Prepared  General C 7782-50-5  Microbiolo Subcontra Prepared Analysis per Subcontra | als by EPA 200/6000 Series by method General Prep- Preservation  hemistry Parameters Total Residual Chlorine pH Salinity Total Solids Total Suspended Solids Total Organic Carbon  ogical Analyses Fecal Coliforms  ceted Analyses by method NA erformed by GZA Geoenviron Aquatic Toxicity  ceted Analyses | Methods Metal Field Preserved; pH<2 confirmed  0.066 8.01 <1.00 488 10.3 7.18  124  see Report | pH<br>O09, D<br>Manchester, | mg/l pH Units ppt (1000) mg/l mg/l mg/l CFU/100 ml  CT* - N/A | 0.020<br>1.00<br>5.00<br>0.8 | 0.006<br>0.144<br>1.53<br>0.4 | 1<br>1<br>1<br>1<br>1<br>1 | methods  SM4500-CI-G (11)  ASTM D 1293-99B  SM 2520 (01)  SM2540 B (11)  SM2540D (11)  SM5310B (00, 11)  SM 9222D-97 | 30-Jun-17<br>09:38<br>28-Jun-17<br>10:00<br>06-Jul-17<br>29-Jun-17<br>07-Jul-17 | 11:35<br>29-Jun-17<br>14:20<br>06-Jul-17<br>05-Jul-17<br>30-Jun-17<br>07-Jul-17 | AAW  RLT  TN  BD  CMB  CMB  RLT | 1710965<br>1711119<br>1710957<br>1711426<br>1711007<br>1711008<br>1711573<br>1710945 | X<br>X<br>X |

| Sample Identification Outfall 003 SC36392-01     |                       |               |       | Project #<br>Chelsea |     | Matrix<br>Surface Wa |             | llection Date<br>27-Jun-17 10 |           |         | <u>ceived</u><br>Jun-17 |       |
|--|-----------------------|---------------|-------|----------------------|-----|----------------------|-------------|-------------------------------|-----------|---------|-------------------------|-------|
| CAS No. Analyte(s)                               | Result                | Flag          | Units | *RDL                 | MDL | Dilution             | Method Ref. | Prepared                      | Analyzed  | Analyst | Batch                   | Cert. |
| Subcontracted Analyses Prepared by method 393336 |                       |               |       |                      |     |                      |             |                               |           |         |                         |       |
| Analysis performed by Phoenix En                 | nvironmental Labs, Ir | nc. * - MACT( | 007   |                      |     |                      |             |                               |           |         |                         |       |
| Oil and Grease by EF                             | PA < 1.5              |               | mg/L  | 1.5                  | 1.5 | 1                    | E1664A      |                               | 12-Jul-17 | MACT0   | 393336A                 | ı     |

06:33

1664A

12-Jul-17 17:11 Page 13 of 14

#### **Notes and Definitions**

D Data reported from a dilution

O09 This sample was analyzed outside the EPA recommended holding time per client request.

QR5 RPD out of acceptance range.

SDUP Duplicate analysis confirmed surrogate failure due to matrix effects.

U Analyte included in the analysis, but not detected at or above the MDL.

dry Sample results reported on a dry weight basis

NR Not Reported

RPD Relative Percent Difference

CIHT The method for residual chlorine indicates that samples should be analyzed immediately. 40 CFR 136 specifies a holding

time of 15 minutes from sampling to analysis. Therefore all aqueous residual chlorine samples not analyzed in the field are

considered out of hold time at the time of sample receipt.

OG The required Matrix Spike and Matrix Spike Duplicate (MS/MSD) for Oil & Grease method 1664B can only be analyzed

when the client has submitted sufficient sample volume. An extra liter per MS/MSD is required to fulfill the method QC criteria. Please refer to Chain of Custody and QC Summary (MS/MSD) of the Laboratory Report to verify ample sample

volume was submitted to fulfill the requirement.

pH The method for pH does not stipulate a specific holding time other than to state that the samples should be analyzed as

soon as possible. For aqueous samples the 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous pH samples not analyzed in the field are considered out of hold time at the time of sample receipt.

All soil samples are analyzed as soon as possible after sample receipt.

LIV The initial volume for this sample has been reduced due to sample matrix and/or historical data therefore elevating the

reporting limit.

<u>Laboratory Control Sample (LCS)</u>: A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

<u>Matrix Spike</u>: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

<u>Method Blank</u>: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

<u>Surrogate</u>: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

<u>Continuing Calibration Verification:</u> The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.



A Division of GZA

GEOTECHNICAL

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77 Batson Drive Manchester, CT 06042 T: 860.643.9560 F: 860.646.7169 www.nebio.com



## ACUTE AQUATIC TOXICITY TEST REPORT

## Gulf Oil Terminal Chelsea, MA

| Test Start Date:6/28/17                                |
|--|
| Test Period: June 2017                                 |
|  |
|  |
| Report Prepared by:                                    |
| New England Bioassay                                   |
| A Division of GZA GeoEnvironmental, Inc. 77 Batson Dr. |
| Manchester, CT 06042                                   |
| NEB Project Number: 05.0045469.00                      |
| Report Date: July 11, 2017                             |
|  |
|  |
| Report Submitted to:                                   |
| Eurofins Spectrum Analytical, Inc.                     |
| 11 Almgren Drive                                       |
| Agawam, MA 01001                                       |
| Sample ID: SC36391-01 / SC36392-01                     |

This report shall not be reproduced, except in its entirety, without written approval of New England Bioassay (NEB). NEB is the sole authority for authorizing edits or modifications to the data contained in this report. Test results relate only to samples analyzed. Please contact the Lab Manager, Kimberly Wills, at 860-858-3153 or <a href="mailto:kimberly.wills@gza.com">kimberly.wills@gza.com</a> if you have any questions concerning these results.

## **Whole Effluent Toxicity Testing Report Instruction Form**

| Client Name/Project: Spectrum / Gulf Oil Terminal  | Test Date:   | 6/28/17   |
|--|--|---|
| Sample ID: SC36391-01 / SC36392-01   |  |   |
| Your results were as follows:  |  |   |
| Monitoring Only  |  |   |
| ☐ Fail – Please proceed according to the instructions in   | n your permit.   |   |
| □ Invalid – Retesting is still required. Retest report   | will be sent at a  | later date under separate cover.  |
| □ Original Test Invalid – Valid retest performed. Bo   | oth test and retes   | t results are attached.   |
| ☐ Retesting will be or has been performed according of EPA-New England's species-specific, self-imple  |  |   |
| This is your case of dilution water to Protocols outlined in the attached copy of EPA-policy for alternate dilution water. The alternate dilution water water as follows: "synthetic laborate protocols, by adding specified amounts of salts into receiving water." Writing this letter should help you | -New England's<br>lution water you story water made<br>deionized water i | species-specific, self-implementing<br>select for future tests for this species<br>up according to EPA's toxicity tes<br>n order to match the hardness of our |
| ☐ Available information is insufficient to determine who to your permit limits. Please submit a current copy of the status of future tests results and help ensure your of the status of future tests.   | f your permit to th  | e NEB Lab so that we can determine  |

## Please complete the items on this list before reporting these results according to the instructions in the "Monitoring and Reporting" Section of your permit.

- Please complete, sign and date the upper portion of the "Whole Effluent Toxicity Test Report Certification" page which is the page directly following this page.
- Fill in the Sample Type and Sample Method (upper right) and the Permit Limits (lower left) on the New England Bioassay EPA Toxicity Test Summary Sheet(s) if they are incomplete.
- Fill in any missing information on the NEB Chain-of-Custody documents. This includes ensuring that the following information is recorded: Sampler's name and title, Facility name and address, Sample collection methods, Sample collection start and end dates and times, Types of sample, Chlorination status of samples upon shipment to NEB, Site description and Sample collection procedures.
- Monitoring results should be summarized on your monthly Discharge Monitoring Report Form.
- Signed and dated originals of this report must be submitted to the State (and Federal) Agencies specified in the "Monitoring and Reporting" section of your permit.

Questions? Please contact the Lab Manager, Kim Wills, at (860) 858-3153 or kimberly.wills@gza.com.

#### WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Permittee)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

| Executed on | [Date] | [Authorized Signature]               |
|-------------|--------|--------------------------------------|
|             |        | [Print or Type Name and Title]       |
|             |        | [Print or Type the Permittee's Name] |
|             |        | [Print or Type the NPDES Permit No.] |

Since the WET test and report check is complicated, the New England Bioassay Aquatic Toxicity Laboratory has certified the validity of the WET test data in the section below. Please note that this does not relieve the permittee from its responsibility to sign and certify the report under 40 C.F.R. S 122.41(k).

#### WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Bioassay Laboratory)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on

[Authorized Signature]

Kim Wills, Laboratory Manager [Print or Type Name and Title]

New England Bioassay

[Print or Type Name of Bioassay Laboratory]

24. Telephone Contacts

If you have questions, please contact Joy Hilton, Water Technical Unit, at (617) 918-1877 or David McDonald, Ecosystem Assessment Unit, at (617) 918-8609.

## NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TEST SUMMARY SHEET

| Facility Name: Gulf C   | Jil Terminal               | Test Start Date:                | 6/28/17                |
|-------------------------|----------------------------|---------------------------------|------------------------|
|                         | er: MA0001091              | Outfall Number:                 | 003                    |
| Toot Tyres              | Test Succion               | Camula Tama                     | Comple Mathed          |
| Test Type               | Test Species               | Sample Type                     | Sample Method          |
| X Acute                 | _ Fathead Minnow           | Prechlorinated                  | X Grab                 |
| Chronic                 | _ Ceriodaphnia Dubia       | Dechlorinated                   | Composite              |
| _ Modified              | _ Daphnia Pulex            | _ Unchlorinated                 | _Flow-thru             |
| (Chronic reporting      | X Mysid Shrimp             | Chlorinated                     | _ Other                |
| LC50 values)            | Sheepshead                 |                                 |                        |
| 24-Hour Screening       | Menidia                    |                                 |                        |
|                         | Sea Urchin                 | TRC conc. 0.125 mg              | o/I .                  |
|                         | Selenastrum                | 11te conem                      | y <b>.</b> 2           |
|                         | Other                      |                                 |                        |
| Dilution Water          | Other                      | _                               |                        |
|                         | llested at a point immedia | ately upstream of or away fror  | n the discharge        |
|                         |                            |                                 | ii tile tilscharge,    |
|                         | ame and sampling locatio   |                                 |                        |
|                         |                            | d a hardness to generally refle | ct the characteristics |
| of the receiving water  | er; (Surface water name:_  |                                 | )                      |
| _ Synthetic water prep  | pared using either Millipo | ore Mill-Q or equivalent deion  | ized water and         |
| reagent grade chemi-    | cals; or deionized water c | combined with mineral water;    |                        |
| Artificial sea salts n  | nixed with deionized water | er;                             |                        |
| Other                   |                            |                                 |                        |
| -                       |                            | _                               |                        |
| Effluent Sampling Dat   | te(s): 6/27/17             |                                 |                        |
| 2                       | (s), <u> </u>              |                                 |                        |
| Effluent Concentration  | ns Tested (in%): 0 6       | .25 12.5 25 50 100              |                        |
|                         | it Concentration):         |                                 |                        |
| (Fernit Lini            | it Concentration).         | monitoring only                 |                        |
| XV CCI / 1'''           | 11 4 10 37 10              | 1 1 1 20 25 24                  |                        |
| Was effluent salinity a | djusted? Yes If yes,       | to what value? 25 ppt           |                        |
| D.C. (F. 11)            | . 1                        | D.C. T T A.                     | 4 1 1 37 37 N          |
| Reference Toxicant tes  | st date: 6/1/1/            | Reference Toxicant Test Acce    | eptable: Yes $X$ No _  |
| 4 1 A D                 | CT 10 1 1                  | 22 24 110.55                    | ' NED                  |
| Age and Age Range of    | f lest Organisms 3 da      | ys (< 24 hours) Source of Org   | anisms <u>NEB</u>      |
|                         | TECT DECLI TO              | 2-DEDMIT LIMITS                 |                        |
|                         |                            | &PERMIT LIMITS                  |                        |
|                         | 1est Accept                | ability Criteria                |                        |
| A C 41 41 TV 4 C        | 4 1                        |                                 |                        |
| A. Synthetic Water Co   |                            | Many Control Dec. 1. C          | . NI/A                 |
| Mean Control Surviva    |                            | Mean Control Reproduction       |                        |
| Mean Control Weight:    | :N/A                       | Mean Control % Fertilizatio     | n: <u>N/A</u>          |
|                         |                            |                                 |                        |
| B. Receiving Water Co   | ontrol                     |                                 |                        |
| Mean Control Surviva    | 1:100%                     | Mean Control Reproduction       | : N/A                  |
| Mean Control Weight:    |                            | Mean Control % Fertilizatio     |                        |
|                         |                            |                                 |                        |
| C. Lab Culture Contro   | ol Ves No X                |                                 |                        |
| C. Lab Culture Contro   | 1 163_ 110 <u>X</u>        |                                 |                        |
| D. Thiogulfata Control  | l Vog No V                 |                                 |                        |
| D. Thiosulfate Control  | i ies_ No <u>x</u>         |                                 |                        |
|                         | Ta-4 17                    | (aniahility)                    |                        |
|                         | <u>lest v</u>              | ariability                      |                        |
| T4 DMOD ( 11)           | NT/A                       |                                 |                        |
| Test PMSD (growth)      | N/A                        |                                 |                        |
| Test PMSD (reproduct    | tion.) <u>N/A</u>          |                                 |                        |

#### Permit Limits & Test Results

|        | Limits |               | <u>Results</u> |  |  |  |
|--------|--------|---------------|----------------|--|--|--|
| LC50   | N/A    | LC50          | >100%          |  |  |  |
|        |        | Upper Value   | ±∞             |  |  |  |
|        |        | Lower Value   | 100%           |  |  |  |
|        |        | Data Analysis |                |  |  |  |
|        |        | Method Used   | Graphical      |  |  |  |
| A-NOEC | N/A    | A-NOEC        | 100%           |  |  |  |
| C-NOEC | N/A    | C-NOEC        | N/A            |  |  |  |
|        |        | LOEC _        | N/A            |  |  |  |
| IC25   | N/A    | IC25          |                |  |  |  |
| IC50   | N/A    | IC50          |                |  |  |  |

#### PMSD Comparison Discussion - N/A

#### Concentration-Response Evaluation

The concentration-response relationship observed in this data set corresponds to the following item number in Chapter Four of "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000:

Ideal concentration-response relationship
 All or nothing response
 Stimulatory response at low concentrations and detrimental effects at higher concentrations
 Stimulation at low concentrations but no significant effect at higher concentrations
 Interrupted concentration-response: significant effects bracketed by non-significant effects
 Interrupted concentration-response: non-significant effects bracketed by significant effects
 Significant effects only at highest concentration
 Significant effects at all test concentrations but flat concentration-response curve
 Significant effects at all test concentrations with a sloped concentration-response curve
 Inverse concentration-response relationship

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

- X 1. Results are reliable and should be reported.
- \_ 2. Results are anomalous. An explanation is provided in the body of the report.
- 2. Results are inconclusive and the test should be repeated with a newly collected sample. An explanation is provided in the body of the report.

## NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TEST SUMMARY SHEET

| Facility Name: Gulf C   | Oil Terminal                  | Test Start Date:                               | 6/28/17                |
|-------------------------|-------------------------------|--|------------------------|
|                         | er: MA0001091                 | Outfall Number:                                | 003                    |
| Test Type               | Test Species                  | Sample Type                                    | Sample Method          |
|                         |                               | Prechlorinated                                 |                        |
| X Acute                 | _ Fathead Minnow              |  | X Grab                 |
| Chronic                 | _ Ceriodaphnia Dubia          | _ Dechlorinated                                | _ Composite            |
| Modified                | _ Daphnia Pulex               | Unchlorinated                                  | Flow-thru              |
| (Chronic reporting      | _ Mysid Shrimp                | Chlorinated                                    | Other                  |
| LC50 values)            | _ Sheepshead                  |  |                        |
| _ 24-Hour Screening     | X Menidia                     |  |                        |
|                         | Sea Urchin                    | TRC conc. 0.125 m                              | g/L                    |
|                         | Selenastrum                   |  |                        |
|                         | Other                         |  |                        |
| Dilution Water          | -                             |  |                        |
|                         | llected at a point immedia    | ately upstream of or away from                 | n the discharge:       |
|                         | ame and sampling location     |  | )                      |
| Alternate Surface W     | later of known quality and    | d a hardness to generally refle                | ct the characteristics |
|                         | er; (Surface water name;      |  |                        |
| Symthetic system man    | named using sither Milling    | ore Mill-Q or equivalent deion                 | izad water and         |
| _ Symmetic water prej   |                               |  | izeu water and         |
| 0 0                     | · ·                           | ombined with mineral water;                    |                        |
| _                       | nixed with deionized water    | er;  |                        |
| _ Other                 |                               | _  |                        |
|                         |                               |  |                        |
| Effluent Sampling Dat   | te(s):6/27/17                 |  |                        |
|                         |                               |  |                        |
|                         | · ·                           | <u>.25                                    </u> |                        |
| * (Permit Lim           | it Concentration): mon        | itoring only                                   |                        |
|                         |                               |  |                        |
| Was effluent salinity a | djusted? Yes If yes,          | to what value? 25 ppt                          |                        |
|                         |                               |  |                        |
| Reference Toxicant tes  | st date: $\frac{6/1/17}{1}$ R | eference Toxicant Test Accep                   | table: Yes X No _      |
|                         |                               | and a factor of                                |                        |
| Age and Age Range of    | f Test Organisms 10 days      | (<24 hours) Source of Org                      | anisms <u>A.I.</u>     |
|                         |                               |  |                        |
|                         |                               | &PERMIT LIMITS                                 |                        |
|                         | Test Accept                   | ability Criteria                               |                        |
|                         |                               |  |                        |
| A. Synthetic Water Co   | ontrol                        |  |                        |
| Mean Control Surviva    | 1:97.5%                       | Mean Control Reproduction                      | : <u>N/A</u>           |
| Mean Control Weight:    | N/A                           | Mean Control % Fertilizatio                    | n: N/A                 |
| J                       |                               |  |                        |
| B. Receiving Water Co   | ontrol                        |  |                        |
| Mean Control Surviva    |                               | Mean Control Reproduction                      | · N/A                  |
| Mean Control Weight:    |                               | Mean Control % Fertilizatio                    |                        |
| Weight.                 | 14/14                         | Wican Control /01 Citinzacio                   | 11                     |
| C. Lab Culture Contro   | l Yes No X                    |  |                        |
| C. Lab Culture Contro   | 1 105_ NO <u>X</u>            |  |                        |
| D. Thiogulfoto Control  | I Vac No V                    |  |                        |
| D. Thiosulfate Control  |                               | aniability.                                    |                        |
|                         | 1est v                        | ariability                                     |                        |
| TADMOD ( 11)            | NT/A                          |  |                        |
| Test PMSD (growth)      | $\frac{N/A}{N/A}$             |  |                        |
| Test PMSD (reproduct    | tion.) <u>N/A</u>             |  |                        |

#### Permit Limits & Test Results

| Limi       | <u>its</u>    | Results    |
|------------|---------------|------------|
| LC50 N/A   | LC50          | >100%      |
|            | Upper Value   | <u></u> ±∞ |
|            | Lower Value   | 100%       |
|            | Data Analysis |            |
|            | Method Used   | Graphical  |
| A-NOEC N/A | A-NOEC        | 100%       |
| C-NOEC N/A | C-NOEC        | N/A        |
|            | LOEC          | N/A        |
| IC25N/A    | IC25          |            |
| IC50 N/A   | IC50          |            |

#### PMSD Comparison Discussion - N/A

#### Concentration-Response Evaluation

The concentration-response relationship observed in this data set corresponds to the following item number in Chapter Four of "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000:

- X 1. Ideal concentration-response relationship2. All or nothing response
- 3. Stimulatory response at low concentrations and detrimental effects at higher concentrations
- \_ 4. Stimulation at low concentrations but no significant effect at higher concentrations
- \_ 5. Interrupted concentration-response: significant effects bracketed by non-significant effects
- 6. Interrupted concentration-response: non-significant effects bracketed by significant effects
- 7. Significant effects only at highest concentration
- 8. Significant effects at all test concentrations but flat concentration-response curve
- \_ 9. Significant effects at all test concentrations with a sloped concentration-response curve
- \_ 10. Inverse concentration-response relationship

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

- X 1. Results are reliable and should be reported.
- \_ 2. Results are anomalous. An explanation is provided in the body of the report.
- 3. Results are inconclusive and the test should be repeated with a newly collected sample. An explanation is provided in the body of the report.

#### MYSIDOPSIS BAHIA AQUATIC TOXICITY TEST REPORT

Test Reference Manual: EPA 821-R-02-012, "Methods for Measuring the Acute Toxicity of

Effluents and Receiving Waters to Freshwater Organisms and

Marine Organisms", Fifth Edition

**Test Method:** Mysidopsis bahia Acute Toxicity Test – Method 2007.0

**Test Type**: Acute Static Non-Renewal Saltwater Test

Salinity: 25 ppt  $\pm$  10% for all dilutions by dry ocean salts (Instant Ocean)

**Temperature**:  $25 \pm 1^{\circ}$ C

Light Quality: Ambient Laboratory Illumination

**Photoperiod:** 16 hours light, 8 hours dark

Test Chamber Size: 250 mL

**Test Solution Volume:** Minimum 200 mL

Age of Test Organisms: 3 days

Number of Mysids

Per Test Chamber: 10

Number of Replicate Test

**Chambers Per Treatment: 4** 

**Total Number of Mysids** 

Per Test Concentration: 40

**Feeding Regime:** Light feeding using concentrated *Artemia* nauplii while holding

prior to initiating the test.

Aeration: Aerated at <100 bubbles/minute

**Dilution Water**: Chelsea River

Alternate Control Water: NEB Artificial Salt Water (salinity  $25 \pm 1$  ppt)

**Effluent Concentrations**: 0%, 6.25%, 12.5%, 25%, 50% and 100% effluent

**Test Duration:** 48 hours

**Effect measured:** Mortality – no movement of body appendages on gentle prodding

**Test Acceptability:**  $\geq 90\%$  survival of test organisms in control solution Yes X No

Sampling Requirements: Samples first used within 36 hours of collection Yes X No

Sample Volume Required: Minimum 2 liters

<u>Test Organism Source</u>: New England Bioassay

<u>Test Acceptability Criteria</u>: Mean Alternate Water Control Survival = <u>100%</u>

Mean Dilution Water Control Survival = 100%

| Test Results:   |   | Limits                 | Results  |
|---|---|------------------------|--|
|   | 48-hour LC50<br>Upper Value<br>Lower Value<br>Data Analysis Method Use<br>A-NOEC                                    | N/A<br>d               | $     \begin{array}{r}                                     $   |
| Reference Toxicant Data:  | Date: Toxicant: Dilution Water: Toxicant Source: Organism Source: 48-hour LC50: In Acceptable Range                 | NI<br>Ne<br>Ne         | 6/1/17 Dedium Dodecyl Sulfate EB Artificial Salt Water EW England Bioassay EW England Bioassay 17.7 mg/L ES                                  |
| Dechlorination Procedures   | : Chlorine is measured usin   | g 4500 (               | CL-G DPD Colorimetric Method.  |
| X Dechlorination was not red  | quired.   |                        |  |
| Since dechlorination of the e with sodium thiosulfate was dechlorinated sample.  Chlorine measurement was mg/ L when measured by am | iffluent was necessary, a thic also included in the test series elevated in the effluent due aperometric titration. | es. Chlo<br>e to inter | sample prior to test initiation. control of diluent water spiked orine was mg/L in a  ference. Chlorine was <0.05  and was found to be mg/L. |
|   |   |                        | *  |
|   |   |                        |  |
|   |   |                        |  |
|   |   |                        |  |
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|   |   |                        |  |
|   |   |                        |  |
|   |   |                        |  |
|   |   |                        |  |
|   |   |                        |  |

#### MENIDIA BERYLLINA AQUATIC TOXICITY TEST REPORT

**Test Reference Manual:** EPA 821-R-02-012, "Methods for Measuring the Acute Toxicity of

Effluents and Receiving Waters to Freshwater Organisms and

Marine Organisms", Fifth Edition

Menidia beryllina Acute Toxicity Test – Method 2006.0 **Test Method:** 

Acute Static Non-Renewal Saltwater Test **Test Type**:

Salinity: 25 ppt  $\pm$  2 ppt by adding dry ocean salts (Instant Ocean)

 $25 \pm 1$ °C Temperature:

Light Quality. Ambient Laboratory Illumination

Photoperiod: 16 hours light, 8 hours dark

**Test Chamber Size:** 250 mL

**Test Solution Volume:** Minimum 200 mL/replicate

Age of Test Organisms: 10 days old (24 hour age range)

Number of Fish Per

**Test Chamber:** 10

Number of Replicate Test **Chambers Per Treatment: 4** 

**Total Number of Organisms Per Test Concentration:** 40

Feeding Regime: Light feeding using concentrated Artemia nauplii while holding

prior to initiating the test.

Aerated at <100 bubbles/minute **Aeration:** 

Chelsea River **Dilution Water:** 

**Alternate Control Water:** NEB Artificial Salt Water (salinity  $25 \pm 1$  ppt)

**Effluent Concentrations:** 0%, 6.25%, 12.5%, 25%, 50% and 100% effluent

48 hours **Test Duration:** 

Effect measured: Mortality – no movement on gentle prodding.

Test Acceptability:  $\geq$  90% survival of test organisms in control solution Yes X No

Yes X No Sampling Requirements: Samples first used within 36 hours of collection

Sample Volume Required: Minimum 2 liters

**Test Organism Source:** Aquatic Biosystems

**Test Acceptability Criteria**: Mean Alternate Water Control Survival = 97.5%

Mean Dilution Water Control Survival = 100%

| Test Results:  |   | Limits                           | Results  |           |
|--|---|----------------------------------|--|-----------|
|  | 48-hour LC50<br>Upper Value<br>Lower Value<br>Data Analysis Method Use<br>A-NOEC                                | N/A<br>ed                        | $>100\%$ $\pm \infty$ $100\%$ Graphical $100\%$                                  |           |
| Reference Toxicant Data:   | Date: Toxicant: Dilution Water: Toxicant Source: Organism Source: 48-hour LC50: In Acceptable Range             | NEB A<br>New Er<br>Aquation 7.78 | Dodecyl Sulfate<br>rtificial Salt Water<br>ngland Bioassay<br>Biosystems<br>mg/L |           |
| Dechlorination Procedures  | : Chlorine is measured usin   | ng 4500 CL <b>-</b> G            | DPD Colorimetric M   | lethod.   |
| $\underline{X}$ Dechlorination was not red   | quired.   |                                  |  |           |
| Sample was dechlorinated to Since dechlorination of the ewith sodium thiosulfate was dechlorinated sample.  Chlorine measurement was mg/L when measured by amp | ffluent was necessary, a thicalso included in the test ser<br>selevated in the effluent duperometric titration. | osulfate contries. Chlorine      | ol of diluent water sp<br>was mg/L in<br>ce. Chlorine was<                       | iked<br>a |
|  |   |                                  |  | iig/L.    |
| Additional Notes or Other  | Conditions Affecting the  | <u>l'est</u> :                   |  |           |
|  |   |                                  |  |           |
|  |   |                                  |  |           |
|  |   |                                  |  | -         |
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|  |   |                                  |  |           |
|  |   |                                  |  |           |

# NEW ENGLAND BIOASSAY ACUTE TOXICITY DATA FORM COVER SHEET FOR LC50 TESTS

| CLIENT:  | Eurofins Spec  | ctrum Analytical                                      |  | M.bahia TEST ID#                                  | 17-936a                            |
|--|--|---|--|---|------------------------------------|
| ADDRESS:   |  | gren Drive  |  | M.beryllina TEST ID#                              | 17-936b                            |
|  | Agawam   | , MA 01001  |  | COC#  | c37-2569                           |
| SAMPLE TYPE:   |  | ninal Outfall 003                                     |  | PROJECT#  | 05.0045469.00                      |
| DILUTION WATER:  | Chels  | ea River  |  |   |                                    |
| Sample Date(s):_   | 6/2  | 27/17   | Received On:   | 6/28/1  | 7                                  |
| INVEI  | RTEBRATES  |   | <u>v</u>   | <u>'ERTEBRATES</u>                                |                                    |
| TEST SET   | UP (TECH INIT)   | KO  | T  | EST SET UP (TECH INIT)                            | KW                                 |
| TEST SET   | TEST SPECIES   | Mysidopsis bahia                                      |  | TEST SPECIES                                      | Menidia beryllina                  |
|  | NEB LOT#   | Mb17(6-25)  |  | NEB LOT#  | Ss17AI(6-27)                       |
|  | AGE  | 3 days  |  | AGE   | 10 days                            |
| TEST SOLUTION  | N VOLUME (mls)   | 200   | TEST SO  | OLUTION VOLUME (mls)                              | 700                                |
| NO. ORGANISMS PER T  |  | 10  |  | AS PER TEST CHAMBER                               | 10                                 |
| NO ORGANISMS PER CO  |  | 40  |  | PER CONCENTRATION                                 | 40                                 |
| NO. ORGANISMS  |  | 40  |  | ANISMS PER CONTROL                                | 40                                 |
|  | DATE   | TIME  | 5-1 F-2  | DATE  | TIME                               |
| TEST START:  | 6/28/17  | 1610  | TEST START:  | 6/28/17   | 1604                               |
| TEST END:  | 6/30/17  | 1555  | TEST END:  | 6/30/17   | 1605                               |
|  |  | CD1027.22   |  | Alkalinity (mg/L CaCO <sub>3)</sub>               |                                    |
|  | L WATER:<br>NEB BATCH#                                     | CRI037-22   | Salinity (ppt) A   | Alkalinity (mg/L CaCO <sub>3)</sub> 125           |                                    |
|  | NEB BATCH#   |   | 25   |   | 0 TEST                             |
| RTIFICIAL SW:  | NEB BATCH#   |   | 25   | 125   | 0 TEST<br>95% Confidence<br>Limits |
| RTIFICIAL SW:  RESULTS OF Mys  METHOD  | NEB BATCH#   | LC50 TEST  95% Confidence                             | RESULTS OF A   | 125<br>Menidia beryllina LC5                      | 95% Confidence                     |
| RTIFICIAL SW:  RESULTS OF Mys  METHOD  INOMIAL/GRAPHICAL                                     | NEB BATCH#<br>sidopsis bahia 1<br>LC50 (%)                 | LC50 TEST  95% Confidence Limits                      | RESULTS OF A METHOD BINOMIAL/GRAPHICAL                               | 125  Menidia beryllina LC5  LC50 (%)              | 95% Confidence<br>Limits           |
| RTIFICIAL SW:  RESULTS OF Mys  METHOD  INOMIAL/GRAPHICAL  ROBIT                              | NEB BATCH#<br>sidopsis bahia 1<br>LC50 (%)                 | LC50 TEST  95% Confidence Limits                      | RESULTS OF / METHOD  BINOMIAL/GRAPHICAL PROBIT                       | 125  Menidia beryllina LC5  LC50 (%)              | 95% Confidence<br>Limits           |
| RESULTS OF Mys  METHOD  INOMIAL/GRAPHICAL  ROBIT  PEARMAN KARBER                             | NEB BATCH# sidopsis bahia 1 LC50 (%) >100%                 | LC50 TEST  95% Confidence Limits                      | RESULTS OF / METHOD  BINOMIAL/GRAPHICAL PROBIT SPEARMAN KARBER       | 125  Menidia beryllina LC5  LC50 (%)  >100%       | 95% Confidence<br>Limits           |
| RESULTS OF Mys  METHOD  INOMIAL/GRAPHICAL  ROBIT  PEARMAN KARBER                             | NEB BATCH#<br>sidopsis bahia 1<br>LC50 (%)                 | LC50 TEST  95% Confidence Limits                      | RESULTS OF / METHOD  BINOMIAL/GRAPHICAL PROBIT                       | 125  Menidia beryllina LC5  LC50 (%)              | 95% Confidence<br>Limits           |
| RESULTS OF Mys  METHOD  INOMIAL/GRAPHICAL  ROBIT  PEARMAN KARBER  IOAEL                      | NEB BATCH#  sidopsis bahia 1  LC50 (%)  >100%              | 250 TEST  95% Confidence Limits  100%±∞               | RESULTS OF / METHOD  BINOMIAL/GRAPHICAL PROBIT SPEARMAN KARBER NOAEL | 125  Menidia beryllina LC5  LC50 (%)  >100%       | 95% Confidence<br>Limits           |
| RESULTS OF Mys  METHOD  INOMIAL/GRAPHICAL ROBIT PEARMAN KARBER TOAEL  NOEC: NO OBSERVABI     | NEB BATCH#  sidopsis bahia 1  LC50 (%)  >100%  LE EFFECT C | 250 TEST  95% Confidence Limits  100%±∞  ONCENTRATION | RESULTS OF / METHOD  BINOMIAL/GRAPHICAL PROBIT SPEARMAN KARBER NOAEL | 125  Menidia beryllina LC5  LC50 (%)  >100%       | 95% Confidence<br>Limits<br>100%±∞ |
|  | NEB BATCH#  sidopsis bahia 1  LC50 (%)  >100%  LE EFFECT C | 250 TEST  95% Confidence Limits  100%±∞  ONCENTRATION | RESULTS OF / METHOD  BINOMIAL/GRAPHICAL PROBIT SPEARMAN KARBER NOAEL | 125  Menidia beryllina LC5  LC50 (%)  >100%       | 95% Confidence<br>Limits<br>100%±∞ |
| RESULTS OF Mys  METHOD  SINOMIAL/GRAPHICAL  ROBIT  PEARMAN KARBER  JOAEL  NOEC: NO OBSERVABI | NEB BATCH#  sidopsis bahia 1  LC50 (%)  >100%  LE EFFECT C | 250 TEST  95% Confidence Limits  100%±∞  ONCENTRATION | RESULTS OF / METHOD  BINOMIAL/GRAPHICAL PROBIT SPEARMAN KARBER NOAEL | 125  Menidia beryllina LC5  LC50 (%)  >100%       | 95% Confidence<br>Limits<br>100%±∞ |
| RESULTS OF Mys  METHOD  INOMIAL/GRAPHICAL ROBIT PEARMAN KARBER OAEL  IOEC: NO OBSERVABI      | NEB BATCH#  sidopsis bahia 1  LC50 (%)  >100%  LE EFFECT C | 250 TEST  95% Confidence Limits  100%±∞  ONCENTRATION | RESULTS OF / METHOD  BINOMIAL/GRAPHICAL PROBIT SPEARMAN KARBER NOAEL | 125  Menidia beryllina LC5  LC50 (%)  >100%  100% | 95% Confidence<br>Limits<br>100%±∞ |

## NEW ENGLAND BIOASSAY Toxicity Test Data Sheet

| NEB Test #:    | 17-936a           | Test Organism:    | Mysidopsis bahi   |         | nia   |
|----------------|-------------------|-------------------|-------------------|---------|-------|
| Project #:     | 05_0045469.00     | Organism Age: _   |                   | 3       |       |
| Facility Name: | Gulf Oil Terminal | Test Duration:    | 48                | (hours) |       |
| Date Sampled:  | 6/27/17           | Beginning Date:   | 6/28/17           | Time:   | 1610  |
| Date Received: | 6/28/17           | Dilution Water So | ource: Chelsea Ri |         | River |
| Sample ID:     | Outfall 003       | Salinity:         | 27                | DI      | ot    |

| Effluent<br>Conc.<br>% |    | umber o<br>Survivin<br>Irganisn | g  | _   | issolve<br>Oxygen<br>(mg/L) | -   | Те   | mperati<br>(°C) | ure  |     | pH<br>(su) |     |    | Salinity<br>(ppt) |    |
|------------------------|----|---------------------------------|----|-----|-----------------------------|-----|------|-----------------|------|-----|------------|-----|----|-------------------|----|
| Initials               | 0  | TBP                             | КО | KO  | TBP                         | PD  | КО   | TBP             | PD   | КО  | TBP        | PD  | КО | TBP               | PD |
|                        | 0  | 24                              | 48 | 0   | 24                          | 48  | 0    | 24              | 48   | 0   | 24         | 48  | 0  | 24                | 48 |
| Control A              | 10 | 10                              | 10 | 7.6 | 5.8                         | 4.7 | 24.0 | 25.4            | 25.2 | 7.8 | 7.9        | 7.7 | 25 | 25                | 25 |
| Control B              | 10 | 10                              | 10 |     | 5.3                         | 4.0 |      | 25.7            | 25.3 |     | 7.9        | 7.6 |    | 25                | 25 |
| Control C              | 10 | 10                              | 10 |     | 5.4                         | 3.8 |      | 25.6            | 25.5 |     | 7,9        | 7.6 |    | 25                | 25 |
| Control D              | 10 | 10                              | 10 |     | 5.2                         | 3.8 |      | 25.7            | 25.3 |     | 7.9        | 7.6 |    | 25                | 25 |
| Diluent A              | 10 | 10                              | 10 | 7.8 | 5.4                         | 3.8 | 24.0 | 25.6            | 25.4 | 7.8 | 7.7        | 7.4 | 27 | 27                | 27 |
| Diluent B              | 10 | 10                              | 10 |     | 4.9                         | 3.6 |      | 25.6            | 25.5 | 0   | 7.6        | 7.4 |    | 27                | 27 |
| Diluent C              | 10 | 10                              | 10 |     | 4.9                         | 3.3 |      | 25.7            | 25.5 |     | 7.6        | 7.4 |    | 27                | 27 |
| Diluent D              | 10 | 10                              | 10 |     | 4.9                         | 3.7 |      | 25.8            | 25.5 |     | 7.6        | 7_4 |    | 27                | 27 |
| 6.25 A                 | 10 | 10                              | 10 | 7.9 | 5.4                         | 4.2 | 24.3 | 25.6            | 25.4 | 7.7 | 7.7        | 7.5 | 27 | 27                | 27 |
| 6.25 B                 | 10 | 10                              | 10 |     | 4.9                         | 3.8 |      | 25.7            | 25.5 |     | 7.7        | 7.4 |    | 27                | 27 |
| 6.25 C                 | 10 | 10                              | 10 |     | 4.8                         | 3.5 |      | 25.6            | 25.5 |     | 7.6        | 7.4 |    | 27                | 27 |
| 6.25 D                 | 10 | 10                              | 10 |     | 4.8                         | 3.4 |      | 25.6            | 25.6 |     | 7.6        | 7.4 |    | 27                | 27 |
| 12.5 A                 | 10 | 10                              | 10 | 7.8 | 5.1                         | 3.4 | 24.3 | 25.6            | 25.6 | 7.7 | 7.7        | 7.4 | 26 | 27                | 27 |
| 12.5 B                 | 10 | 10                              | 10 |     | 5.0                         | 3.3 |      | 25.5            | 25.5 |     | 7.7        | 7.4 |    | 27                | 27 |
| 12.5 C                 | 10 | 10                              | 10 |     | 5.0                         | 3.9 |      | 25.5            | 25.4 |     | 7.7        | 7.5 |    | 27                | 27 |
| 12.5 D                 | 10 | 10                              | 10 |     | 4.9                         | 3.4 |      | 25.6            | 25.6 |     | 7.6        | 7.4 |    | 26                | 27 |
| 25 A                   | 10 | 10                              | 10 | 7.6 | 5.7                         | 4.6 | 24.2 | 25.5            | 25.3 | 7.8 | 7.8        | 7.6 | 26 | 27                | 27 |
| 25 B                   | 10 | 10                              | 10 |     | 5.9                         | 4.6 |      | 25.6            | 25.2 |     | 7.8        | 7.6 |    | 26                | 27 |
| 25 C                   | 10 | 10                              | 10 |     | 4.9                         | 3.8 |      | 25.6            | 25.3 |     | 7.7        | 7.5 |    | 26                | 27 |
| 25 D                   | 10 | 10                              | 10 |     | 5,0                         | 3.8 |      | 25.7            | 25.5 |     | 7.7        | 7.5 |    | 26                | 27 |

| LC50  | Confidence Interval | A-NOEC | Computational Method |
|-------|---------------------|--------|----------------------|
| >100% | 100%±∞              | 100%   | Graphical            |

## NEW ENGLAND BIOASSAY Toxicity Test Data Sheet

| NEB Test #:    | 17-936a           | Test Organism: _  | Mysidopsis bahi  |          | ahia  |  |
|----------------|-------------------|-------------------|------------------|----------|-------|--|
| Project #:     | 05.0045469.00     | Organism Age:     |                  |          | days  |  |
| Facility Name: | Gulf Oil Terminal | Test Duration:    | 48               | (hours)  |       |  |
| Date Sampled:  | 6/27/17           | Beginning Date:   | 6/28/17          | _Time: _ | 1610  |  |
| Date Received: | 6/28/17           | Dilution Water So | ource: Chelsea R |          | River |  |
| Sample ID:     | Outfall 003       | Salinity:         | 27               | pr       | ot    |  |

| Effluent<br>Conc.<br>% | 5  | umber o<br>Survivin<br>rganisn | g  | Dissolved<br>Oxygen<br>(mg/L) |     | Те     | Temperature         pH           ( °C )         (su) |      |      |     |     | Salinity<br>(ppt) |    |     |    |
|------------------------|----|--------------------------------|----|-------------------------------|-----|--------|--|------|------|-----|-----|-------------------|----|-----|----|
| Initials               | 0  | TBP                            | ко | KO                            | TBP | TBP PD |  | TBP  | PD   | КО  | TBP | PD                | KO | TBP | PD |
|                        | 0  | 24                             | 48 | 0                             | 24  | 48     | 0  | 24   | 48   | 0   | 24  | 48                | 0  | 24  | 48 |
| 50 A                   | 10 | 10                             | 10 | 7.7                           | 5.8 | 4.7    | 24.2   | 25.6 | 25.3 | 7.8 | 7.9 | 7.7               | 26 | 26  | 26 |
| 50 B                   | 10 | 10                             | 10 |                               | 4.7 | 3.8    |  | 25.6 | 25.3 |     | 7.8 | 7.7               |    | 26  | 26 |
| 50 C                   | 10 | 10                             | 10 |                               | 5.2 | 3.9    |  | 25.5 | 25.3 |     | 7.9 | 7.7               |    | 26  | 26 |
| 50 D                   | 10 | 10                             | 10 |                               | 5.2 | 3.9    |  | 25.7 | 25.5 |     | 7.9 | 7.7               |    | 26  | 26 |
| 100 A                  | 10 | 10                             | 10 | 7_4                           | 5.7 | 4.6    | 24.2   | 25.6 | 25.4 | 7.9 | 8.0 | 7.9               | 25 | 25  | 26 |
| 100 B                  | 10 | 10                             | 10 |                               | 4.1 | 3.4    |  | 25.7 | 25.5 |     | 7.9 | 7.8               |    | 25  | 25 |
| 100 C                  | 10 | 10                             | 10 |                               | 5.1 | 3.8    |  | 25.6 | 25.4 |     | 8.0 | 7.9               |    | 25  | 25 |
| 100 D                  | 10 | 10                             | 10 |                               | 5.3 | 4.2    |  | 25.7 | 25.5 |     | 8.0 | 7.9               |    | 25  | 26 |
|                        |    |                                |    |                               |     |        |  |      |      |     |     |                   |    |     |    |
|                        |    |                                |    |                               |     |        |  |      |      |     |     |                   |    |     |    |
|                        |    |                                |    |                               |     |        |  |      |      |     |     |                   |    |     |    |

| LC50  | Confidence Interval | A-NOEC | Computational Method |
|-------|---------------------|--------|----------------------|
| >100% | 100%±∞              | 100%   | Graphical            |

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10/10

10/10

10/10

Report Date:

11 Jul-17 10:38 (p 1 of 2) 17-936a | 15-1897-8539

**Test Code:** Mysidopsis 96-h Acute Survival Test New England Bioassay 07-1362-1656 Analysis ID: Endpoint: 48h Survival Rate **CETIS Version:** CETISv1.9.2 Analyzed: 11 Jul-17 10:38 Analysis: Linear Interpolation (ICPIN) Official Results: Yes Batch ID: 12-8602-9855 Test Type: Survival (48h) Analyst: EPA/821/R-02-012 (2002) Diluent: Start Date: 28 Jun-17 16:10 Protocol: Receiving Water Ending Date: 30 Jun-17 15:55 Species: Mysidopsis bahia Brine: **Duration:** 48h Source: In-House Culture Age: 3d 1267C5E5 03-0879-0757 Client: Spectrum Analytical Sample ID: Code: Sample Date: 27 Jun-17 10:00 Material: Not Applicable Project: Gulf Oil Terminal (MA0001091) Receipt Date: 28 Jun-17 Source: Station: Sample Age: 30h **Linear Interpolation Options** X Transform Y Transform Seed Resamples Exp 95% CL Method Two-Point Interpolation Log(X) Linear 2115718 200 Yes **Point Estimates** % 95% LCL 95% UCL TU 95% LCL 95% UCL Level LC50 >100 n/a n/a n/a n/a 48h Survival Rate Summary Calculated Variate(A/B) Conc-% Code Count Mean Min Max Std Err **Std Dev** CV% %Effect A В 40 0 D 4 1.0000 1.0000 1.0000 0.0000 0.0000 0.00% 0.0% 40 6.25 4 1.0000 1.0000 1.0000 0.0000 0.0000 0.00% 0.0% 40 40 0.0000 12.5 4 1.0000 1.0000 1.0000 0.0000 0.00% 0.0% 40 40 4 40 40 25 1.0000 1.0000 1.0000 0.0000 0.0000 0.00% 0.0% 50 4 1.0000 1.0000 1.0000 0.0000 0.0000 0.00% 0.0% 40 40 100 4 1.0000 1.0000 1.0000 0.0000 0.0000 0.00% 0.0% 40 40 48h Survival Rate Detail Conc-% Code Rep 1 Rep 2 Rep 3 Rep 4 0 D 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 6.25 1.0000 1.0000 12.5 1.0000 1.0000 1.0000 1.0000 25 1.0000 1.0000 1.0000 1.0000 50 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 100 48h Survival Rate Binomials Conc-% Code Rep 1 Rep 2 Rep 3 Rep 4 0 D 10/10 10/10 10/10 10/10 6.25 10/10 10/10 10/10 10/10 10/10 10/10 10/10 12.5 10/10 25 10/10 10/10 10/10 10/10

10/10

10/10

Report Date: **Test Code:** 

11 Jul-17 10:38 (p 2 of 2) 17-936a | 15-1897-8539

Mysidopsis 96-h Acute Survival Test

**New England Bioassay** 

Analysis ID: Analyzed:

07-1362-1656 11 Jul-17 10:38 Endpoint: 48h Survival Rate

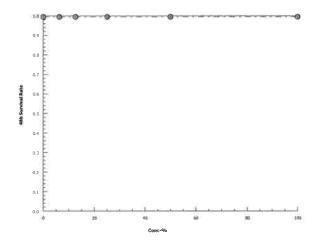
Analysis:

Linear Interpolation (ICPIN)

**CETIS Version:** Official Results: Yes

CETISv1.9.2

#### Graphics



Analyst:\_\_\_\_\_ QA:\_\_\_

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Report Date: Test Code:

11 Jul-17 10:38 (p 1 of 2) 17-936a | 15-1897-8539

**New England Bioassay** Mysidopsis 96-h Acute Survival Test 08-2671-9310 Endpoint: 48h Survival Rate **CETIS Version:** CETISv1.9.2 Analysis ID: Nonparametric-Control vs Treatments Official Results: Analyzed: 11 Jul-17 10:38 Analysis: Yes Batch ID: 12-8602-9855 Test Type: Survival (48h) Analyst: Start Date: 28 Jun-17 16:10 Protocol: EPA/821/R-02-012 (2002) Diluent: Receiving Water Ending Date: 30 Jun-17 15:55 Species: Mysidopsis bahia Brine: **Duration:** 48h Source: In-House Culture Age: Sample ID: 03-0879-0757 Code: 1267C5E5 Client: Spectrum Analytical Sample Date: 27 Jun-17 10:00 Material: Not Applicable Project: Receipt Date: 28 Jun-17 Source: Gulf Oil Terminal (MA0001091) Station: Sample Age: 30h NOEL LOEL TOEL TU **Data Transform** Alt Hyp Angular (Corrected) C > T 100 > 100 n/a 1 Steel Many-One Rank Sum Test Critical DF P-Type P-Value Decision(α:5%) Control vs Conc-% **Test Stat Ties** 10 0.8333 Non-Significant Effect Dilution Water 6.25 18 1 6 Asymp 10 0.8333 12.5 18 1 6 Asymp Non-Significant Effect 25 18 10 1 6 Asymp 0.8333 Non-Significant Effect 50 18 10 1 6 Asymp 0.8333 Non-Significant Effect 100 18 10 1 6 Asymp 0.8333 Non-Significant Effect **ANOVA Table** DF Decision(a:5%) Source **Sum Squares** Mean Square F Stat P-Value 5 Significant Effect Between 0 0 65540 <1.0E-37 0 0 Error 18 0 23 Total 48h Survival Rate Summary 95% LCL 95% UCL Median Min Max Std Err CV% %Effect Conc-% Code Count Mean 0.00% 0,00% 0 4 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.0000 D 6.25 4 1.0000 1.0000 1,0000 1.0000 1.0000 1.0000 0.0000 0.00% 0.00% 12.5 4 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.0000 0.00% 0.00% 25 4 1.0000 1,0000 0.0000 1.0000 1.0000 1.0000 1.0000 0.00% 0.00% 50 4 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.0000 0.00% 0.00% 1.0000 1.0000 1.0000 1.0000 1.0000 0.0000 0.00% 0.00% 100 4 1.0000 **Angular (Corrected) Transformed Summary** Std Err CV% %Effect Count Mean 95% UCL Median Min Max Conc-% Code 95% LCL 0 D 1,412 1.412 0.00% 0.00% 4 1.412 1.412 1.412 1.412 0 4 1.412 1.412 1.412 1.412 0 0.00% 6.25 1.412 1.412 0.00% 12.5 4 1.412 1.412 1.412 1.412 1.412 1.412 0 0.00% 0.00% 1.412 25 4 1.412 1.412 1.412 1.412 1.412 0 0.00% 0.00% 50 4 1.412 1.412 1.412 1.412 1.412 1.412 0 0.00% 0.00% 4 1.412 0 0.00% 0.00% 100 1.412 1.412 1.412 1.412 1.412 48h Survival Rate Detail Conc-% Code Rep 1 Rep 2 Rep 3 Rep 4 0 D 1.0000 1.0000 1.0000 1.0000 6.25 1.0000 1.0000 1.0000 1,0000 1.0000 12.5 1.0000 1,0000 1.0000 25 1.0000 1.0000 1.0000 1.0000

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Report Date: Test Code:

11 Jul-17 10:38 (p 2 of 2) 17-936a | 15-1897-8539

Mysidopsis 96-h Acute Survival Test

New England Bioassay

| Analysis ID: | 08-2671-9310    | Endpoint: | 48h Survival Rate                   | <b>CETIS Version:</b> | CETISv1.9.2 |
|--------------|-----------------|-----------|-------------------------------------|-----------------------|-------------|
| Analyzed:    | 11 Jul-17 10:38 | Analysis: | Nonparametric-Control vs Treatments | Official Results:     | Yes         |

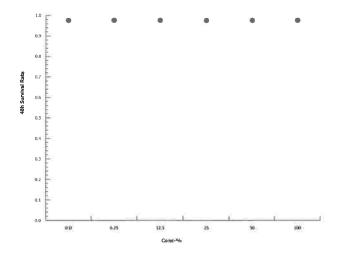
| Angular | (Corrected) | Transformed | Detail |
|---------|-------------|-------------|--------|
|---------|-------------|-------------|--------|

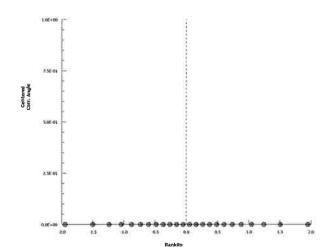
| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|--------|------|-------|-------|-------|-------|
| 0      | D    | 1.412 | 1.412 | 1,412 | 1,412 |
| 6.25   |      | 1.412 | 1.412 | 1.412 | 1.412 |
| 12.5   |      | 1.412 | 1.412 | 1.412 | 1.412 |
| 25     |      | 1.412 | 1.412 | 1.412 | 1.412 |
| 50     |      | 1.412 | 1.412 | 1.412 | 1.412 |
| 100    |      | 1.412 | 1.412 | 1.412 | 1.412 |

#### 48h Survival Rate Binomials

| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|--------|------|-------|-------|-------|-------|
| 0      | D    | 10/10 | 10/10 | 10/10 | 10/10 |
| 6.25   |      | 10/10 | 10/10 | 10/10 | 10/10 |
| 12.5   |      | 10/10 | 10/10 | 10/10 | 10/10 |
| 25     |      | 10/10 | 10/10 | 10/10 | 10/10 |
| 50     |      | 10/10 | 10/10 | 10/10 | 10/10 |
| 100    |      | 10/10 | 10/10 | 10/10 | 10/10 |

#### Graphics





## NEW ENGLAND BIOASSAY Toxicity Test Data Sheet

| NEB Test #:    | 17-936b           | Test Organism: _  | Me      | enidia berylli | na    |
|----------------|-------------------|-------------------|---------|----------------|-------|
| Project #:     | 05.0045469.00     | Organism Age: _   |         | 10             | days  |
| Facility Name: | Gulf Oil Terminal | Test Duration:    | 48      | (hours)        |       |
| Date Sampled:  | 6/27/17           | Beginning Date:   | 6/28/17 | Time: _        | 1604  |
| Date Received: | 6/28/17           | Dilution Water So | urce:   | Chelsea        | River |
| Sample ID:     | Outfall 003       | Salinity:         | 27      | Dt             | ot    |

| Effluent<br>Conc.<br>% |    | lumber o<br>Survivin<br>Organism | g  | Dissolved<br>Oxygen<br>(mg/L) |     | Те  | mperati<br>(°C) | ure  | pH<br>(su) |     |     | Salinity<br>(ppt) |    |     |    |
|------------------------|----|----------------------------------|----|-------------------------------|-----|-----|-----------------|------|------------|-----|-----|-------------------|----|-----|----|
| Initials               | 0  | TBP                              | KO | KO                            | TBP | PD  | КО              | TBP  | PD         | KO  | TBP | PD                | KO | TBP | PD |
|                        | 0  | 24                               | 48 | 0                             | 24  | 48  | 0               | 24   | 48         | 0   | 24  | 48                | 0  | 24  | 48 |
| Control A              | 10 | 9                                | 9  | 7.6                           | 5.7 | 5.1 | 24.0            | 25.4 | 25.7       | 7.8 | 8.0 | 7.8               | 25 | 25  | 25 |
| Control B              | 10 | 10                               | 10 |                               | 5.8 | 4.9 |                 | 25.3 | 25.7       |     | 8.0 | 7.8               |    | 25  | 25 |
| Control C              | 10 | 10                               | 10 |                               | 5.9 | 4.9 |                 | 25.2 | 25.7       |     | 8.0 | 7.8               |    | 25  | 25 |
| Control D              | 10 | 10                               | 10 |                               | 5.9 | 4.9 |                 | 25.4 | 25.7       |     | 8.0 | 7.8               |    | 25  | 25 |
| Diluent A              | 10 | 10                               | 10 | 7.8                           | 5.7 | 4.8 | 24.0            | 25.4 | 25.7       | 7.8 | 7.7 | 7.6               | 27 | 26  | 27 |
| Diluent B              | 10 | 10                               | 10 |                               | 5.6 | 5.0 |                 | 25.4 | 25.5       |     | 7.7 | 7.6               |    | 27  | 27 |
| Diluent C              | 10 | 10                               | 10 |                               | 5.9 | 5.2 |                 | 25.3 | 25.4       |     | 7.7 | 7.7               |    | 27  | 27 |
| Diluent D              | 10 | 10                               | 10 |                               | 5.8 | 5.0 |                 | 25.4 | 25.5       |     | 7.7 | 7.6               |    | 27  | 27 |
| 6.25 A                 | 10 | 10                               | 10 | 7.9                           | 5.6 | 5.1 | 24.3            | 25.5 | 25.7       | 7.7 | 7.7 | 7.7               | 27 | 26  | 26 |
| 6.25 B                 | 10 | 10                               | 10 |                               | 5.5 | 5.0 |                 | 25.5 | 25.7       |     | 7.7 | 7.7               |    | 26  | 26 |
| 6.25 C                 | 10 | 10                               | 10 |                               | 5.5 | 4.9 |                 | 25.5 | 25.6       |     | 7.7 | 7.7               |    | 26  | 27 |
| 6.25 D                 | 10 | 10                               | 10 |                               | 5.6 | 4.6 |                 | 25.4 | 25.7       |     | 7.7 | 7.6               |    | 27  | 27 |
| 12.5 A                 | 10 | 10                               | 10 | 7.8                           | 5.5 | 5.2 | 24.3            | 25.6 | 25.7       | 7.7 | 7.7 | 7.7               | 26 | 26  | 26 |
| 12.5 B                 | 10 | 10                               | 10 |                               | 5.5 | 5.1 |                 | 25.6 | 25.6       |     | 7.7 | 7.7               |    | 26  | 26 |
| 12.5 C                 | 10 | 10                               | 10 |                               | 5.4 | 5.2 |                 | 25.5 | 25.6       |     | 7.7 | 7.7               |    | 26  | 26 |
| 12.5 D                 | 10 | 10                               | 10 |                               | 5.3 | 4.8 |                 | 25.5 | 25.6       |     | 7.7 | 7.7               |    | 26  | 26 |
| 25 A                   | 10 | 9                                | 9  | 7.6                           | 5.6 | 5.5 | 24.2            | 25.4 | 25.4       | 7.8 | 7.8 | 7.7               | 26 | 26  | 26 |
| 25 B                   | 10 | 8                                | 8  |                               | 5.6 | 5.2 |                 | 25.4 | 25.5       |     | 7.8 | 7.8               |    | 26  | 26 |
| 25 C                   | 10 | 10                               | 10 |                               | 5.7 | 5.2 |                 | 25.4 | 25.5       |     | 7.8 | 7.8               |    | 26  | 26 |
| 25 D                   | 10 | 9                                | 9  |                               | 5.2 | 4.9 |                 | 25.5 | 25.5       |     | 7.8 | 7.7               |    | 26  | 26 |

| LC50  | Confidence Interval | A-NOEC | Computational Method |
|-------|---------------------|--------|----------------------|
| >100% | 100%±∞              | 100%   | Graphical            |

## NEW ENGLAND BIOASSAY Toxicity Test Data Sheet

| NEB Test #:    | 17-936b           | Test Organism:         | Menidia beryllina |
|----------------|-------------------|------------------------|-------------------|
| Project #:     | 05.0045469.00     | Organism Age:          | days              |
| Facility Name: | Gulf Oil Terminal | Test Duration: 4       | 8 (hours)         |
| Date Sampled:  | 6/27/17           | Beginning Date:6/28    | 3/17 Time:1604    |
| Date Received: | 6/28/17           | Dilution Water Source: | Chelsea River     |
| Sample ID:     | Outfall 003       | Salinity:              | 27 ppt            |

| Effluent<br>Conc.<br>% |    | lumber o<br>Survivin<br>Organisn | g  | Dissolved<br>Oxygen<br>(mg/L) |     | Те  | mperati<br>(°C) | ure  |      | pH<br>(su) |     | Salinity<br>(ppt) |    |     |    |
|------------------------|----|----------------------------------|----|-------------------------------|-----|-----|-----------------|------|------|------------|-----|-------------------|----|-----|----|
| Initials               | 0  | TBP                              | КО | KO                            |     |     | KO              | TBP  | PD   | KO         | TBP | PD                | KO | TBP | PD |
|                        | 0  | 24                               | 48 | 0                             | 24  | 48  | 0               | 24   | 48   | 0          | 24  | 48                | 0  | 24  | 48 |
| 50 A                   | 10 | 10                               | 9  | 7.7                           | 5.7 | 5.2 | 24.2            | 25.3 | 25.4 | 7.8        | 7.9 | 7.9               | 26 | 26  | 26 |
| 50 B                   | 10 | 10                               | 10 |                               | 5.6 | 4.9 | 1 = 1           | 25.3 | 25.4 |            | 7.9 | 7.8               |    | 26  | 26 |
| 50 C                   | 10 | 10                               | 10 |                               | 5.3 | 5.0 |                 | 25.4 | 25.4 |            | 7.8 | 7.8               |    | 26  | 26 |
| 50 D                   | 10 | 10                               | 10 | 1 7                           | 5.2 | 4.9 |                 | 25.5 | 25.5 |            | 7.8 | 7.8               |    | 26  | 26 |
| 100 A                  | 10 | 10                               | 10 | 7.4                           | 5.5 | 5.1 | 24.2            | 25.2 | 25.4 | 7.9        | 8.0 | 8.0               | 25 | 25  | 25 |
| 100 B                  | 10 | 10                               | 10 |                               | 5.4 | 5.2 |                 | 25.3 | 25.3 |            | 8.0 | 8.0               |    | 25  | 25 |
| 100 C                  | 10 | 10                               | 10 |                               | 5.4 | 5.3 |                 | 25.3 | 25.3 |            | 8.0 | 8.0               |    | 25  | 25 |
| 100 D                  | 10 | 10                               | 10 |                               | 5.5 | 5.3 |                 | 25.3 | 25.3 |            | 8.0 | 8.0               |    | 25  | 25 |
|                        |    |                                  |    |                               |     |     |                 |      |      |            |     |                   |    |     |    |
|                        |    |                                  |    |                               |     |     |                 |      |      |            |     |                   |    |     |    |
|                        |    |                                  |    |                               |     |     |                 |      |      |            |     |                   |    |     |    |
|                        |    |                                  |    |                               |     |     |                 |      |      |            |     |                   |    |     |    |

| LC50  | Confidence Interval | A-NOEC | Computational Method |
|-------|---------------------|--------|----------------------|
| >100% | 100%±∞              | 100%   | Graphical            |

Report Date: Test Code: 11 Jul-17 10:39 (p 1 of 2) 17-936b | 14-5186-2294

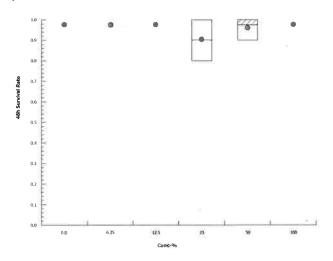
|                    |                           |                                      |          |                                     |          |         |             |          | ies         | t Code:                  |                    | 17-9366   1 | 4-0100-22                |
|--------------------|---------------------------|--------------------------------------|----------|-------------------------------------|----------|---------|-------------|----------|-------------|--------------------------|--------------------|-------------|--------------------------|
| Inland Silvers     | side 96-h Acute           | Survival 1                           | Test     |                                     |          |         |             |          |             |                          | N                  | ew Englan   | d Bioass                 |
| Analysis ID:       | 00-5413-7171              |                                      |          |                                     |          |         |             | CE       | ΓIS Version | : CETISv1                | .9.2               |             |                          |
| Analyzed:          | 11 Jul-17 10:3            | 39 <b>A</b> r                        | nalysis: | Nonparametric-Control vs Treatments |          |         |             | Offi     | cial Result | s: Yes                   |                    |             |                          |
| Batch ID:          | 16-6034-2378              | Te                                   | st Type: | Survival (48h)                      |          |         |             | Ала      | ılyst:      |                          |                    |             |                          |
| Start Date:        | 28 Jun-17 16:0            |                                      |          |                                     |          |         | -012 (2002) |          |             | Diluent: Receiving Water |                    |             |                          |
| Ending Date:       | 30 Jun-17 16:0            |                                      |          |                                     |          | a       |             |          | Brine:      |                          |                    |             |                          |
| Duration:          | 48h                       |                                      |          |                                     |          | re      |             |          | Age         | : 10                     | <del>d</del>       |             |                          |
| Sample ID:         | 10-6666-1888              | 0-6666-1888 Code:                    |          |                                     | 3F93F800 |         |             |          | Clie        | ent: Sp                  | ectrum Analy       | /tical      |                          |
| Sample Date:       | 27 Jun-17 10:00 Material: |                                      |          | Not Applicable                      |          |         |             | Pro      | ject:       |                          |                    |             |                          |
| Receipt Date:      | : 28 Jun-17               |                                      |          |                                     |          | al (MA0 | 0010        | 91)      |             |                          |                    |             |                          |
| Sample Age:        | 30h                       | St                                   | ation:   |                                     |          |         |             |          |             |                          |                    |             |                          |
| Data Transfor      | rm                        | Alt Hyp                              | )        |                                     |          |         |             |          | NOEL        | LOEL                     | TOEL               | TU          | PMSD                     |
| Angular (Corre     | ected)                    | C > T                                |          |                                     |          |         |             |          | 100         | > 100                    | n/a                | 1           | 6.72%                    |
| Steel Many-O       | ne Rank Sum 1             | Test                                 |          |                                     |          |         |             |          |             |                          |                    |             |                          |
| Control            | vs Conc-%                 |                                      | Test S   | Stat                                | Critical | Ties    | DF          | P-Type   | P-Value     | Decision                 | n(a:5%)            |             |                          |
| Dilution Water     | 6.25                      |                                      | 18       |                                     | 10       | 1       | 6           | Asymp    | 0.8333      | Non-Sign                 | nificant Effec     | 1           |                          |
|                    | 12.5                      |                                      | 18       |                                     | 10       | 1       | 6           | Asymp    | 0.8333      | Non-Sigr                 | nificant Effect    | t           |                          |
|                    | 25                        |                                      | 12       |                                     | 10       | 1       | 6           | Asymp    | 0.1424      | Non-Sigr                 | nificant Effect    | t           |                          |
|                    | 50                        |                                      | 16       |                                     | 10       | 1       | 6           | Asymp    | 0.6105      | Non-Sigr                 | nificant Effect    | t           |                          |
|                    | 100                       |                                      | 18       |                                     | 10       | 1.      | 6           | Asymp    | 0.8333      | Non-Sigr                 | nificant Effect    | t           |                          |
| ANOVA Table        |                           |                                      |          |                                     |          |         |             |          |             |                          |                    |             |                          |
| Source             | Sum Squ                   | uares                                | Mean     | Squa                                | are      | DF      |             | F Stat   | P-Value     | Decision                 | ι(α:5%)            |             |                          |
| Between            | 0.079866                  | 5                                    | 0.0159   | 9732                                |          | 5       |             | 4,323    | 0.0093      | Significa                | nt Effect          |             |                          |
| Error              | 0.066502                  | 26                                   | 0.0036   | 3946                                |          | 18      |             |          |             |                          |                    |             |                          |
| Total              | 0.146369                  | )                                    |          |                                     |          | 23      |             |          |             |                          |                    |             |                          |
| Distributional     | l Tests                   |                                      |          |                                     |          |         |             |          |             |                          |                    |             |                          |
| Attribute          | Test                      | Test                                 |          |                                     |          | Test S  | itat        | Critical | P-Value     | Decision                 | n(a:1%)            |             |                          |
| Variances          | Levene E                  | Levene Equality of Variance Test     |          |                                     |          | 3.608   |             | 4.248    | 0.0195      | Equal Va                 | riances            |             |                          |
| Variances          | Mod Leve                  | Mod Levene Equality of Variance Test |          |                                     |          | 1_723   |             | 4.248    | 0.1804      | Equal Va                 | ıriances           |             |                          |
| Distribution       | Shapiro-\                 | Shapiro-Wilk W Normality Test        |          |                                     |          | 0.657   | t           | 0.884    | 2.9E-06     | Non-Nor                  | mal Distributi     | ion         |                          |
| 48h Survival I     | Rate Summary              |                                      |          |                                     |          |         |             |          |             |                          |                    |             |                          |
| Conc-%             | Code                      | Count                                | Mean     |                                     | 95% LCL  |         |             |          | Min         | Max                      | Std Err            | CV%         | %Effec                   |
| 0                  | D                         | 4                                    | 1.0000   |                                     | 1.0000   | 1_0000  |             | 1.0000   | 1.0000      | 1,0000                   | 0.0000             | 0.00%       | 0.00%                    |
| 6.25               |                           | 4                                    | 1.0000   |                                     | 1,0000   | 1.0000  | )           | 1.0000   | 1.0000      | 1.0000                   | 0.0000             | 0.00%       | 0.00%                    |
| 12.5               |                           | 4                                    | 1.0000   |                                     | 1.0000   | 1.0000  | )           | 1.0000   | 1.0000      | 1.0000                   | 0.0000             | 0.00%       | 0.00%                    |
| 25                 |                           | 4                                    | 0.9000   | )                                   | 0.7701   | 1.0000  | )           | 0.9000   | 0.8000      | 1,0000                   | 0.0408             | 9.07%       | 10.00%                   |
| 50                 |                           | 4                                    | 0.9750   | )                                   | 0.8954   | 1.0000  |             | 1.0000   | 0.9000      | 1.0000                   | 0.0250             | 5.13%       | 2.50%                    |
| 100                |                           | 4                                    | 1.0000   | )                                   | 1.0000   | 1_0000  | )           | 1.0000   | 1.0000      | 1.0000                   | 0.0000             | 0.00%       | 0.00%                    |
| Angular (Corr      | rected) Transfo           | rmed Sum                             | mary     |                                     |          |         |             |          |             |                          |                    |             |                          |
| Conc-%             | Code                      | Count                                | Mean     |                                     | 95% LCL  | 95% L   | ICL         | Median   | Min         | Max                      | Std Err            | CV%         | %Effec                   |
| 0                  | D                         | 4                                    | 1.412    |                                     | 1.412    | 1.412   |             | 1.412    | 1.412       | 1.412                    | 0                  | 0.00%       | 0.00%                    |
|                    |                           | 4                                    | 1.412    |                                     | 1.412    | 1.412   |             | 1.412    | 1.412       | 1.412                    | 0                  | 0.00%       | 0.00%                    |
|                    |                           |                                      | 4 440    |                                     | 1.412    | 1.412   |             | 1.412    | 1.412       | 1.412                    | 0                  | 0.00%       | 0.00%                    |
| 12.5               |                           | 4                                    | 1.412    |                                     |          |         |             |          |             |                          |                    |             |                          |
| 6.25<br>12.5<br>25 |                           | 4<br>4                               | 1.254    |                                     | 1.056    | 1_453   |             | 1.249    | 1.107       | 1.412                    | 0_06231            | 9.93%       |                          |
| 12.5               |                           |                                      |          |                                     |          |         |             |          |             |                          | 0.06231<br>0.04074 |             | 11.17%<br>2.89%<br>0.00% |

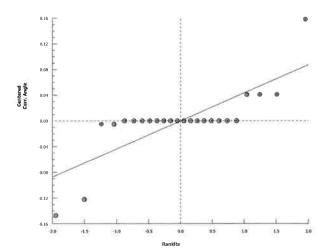
Report Date:

11 Jul-17 10:39 (p 2 of 2) 17-936b | 14-5186-2294

|               |                   |           |            |                      | E .                     | Test Code:        | 17-936b   14-5186-2294 |
|---------------|-------------------|-----------|------------|----------------------|-------------------------|-------------------|------------------------|
| Inland Silver | side 96-h Acute S | urvival T |            | New England Bioassay |                         |                   |                        |
| Analysis ID:  | 00-5413-7171      | En        | dpoint: 48 | 8h Survival F        | Rate                    | CETIS Version:    | CETISv1.9.2            |
| Analyzed:     | 11 Jul-17 10:39   | •         |            |                      | c-Control vs Treatments | Official Results: | Yes                    |
| 48h Survival  | Rate Detail       |           |            |                      |                         |                   |                        |
| Conc-%        | Code              | Rep 1     | Rep 2      | Rep 3                | Rep 4                   |                   |                        |
| 0             | D                 | 1.0000    | 1.0000     | 1,0000               | 1,0000                  |                   |                        |
| 6.25          |                   | 1.0000    | 1.0000     | 1,0000               | 1,0000                  |                   |                        |
| 12.5          |                   | 1.0000    | 1.0000     | 1.0000               | 1.0000                  |                   |                        |
| 25            |                   | 0.9000    | 0.8000     | 1.0000               | 0.9000                  |                   |                        |
| 50            |                   | 0.9000    | 1.0000     | 1.0000               | 1.0000                  |                   |                        |
| 100           |                   | 1.0000    | 1.0000     | 1.0000               | 1.0000                  |                   |                        |
| Angular (Cor  | rected) Transforr | ned Deta  | il         |                      |                         |                   |                        |
| Conc-%        | Code              | Rep 1     | Rep 2      | Rep 3                | Rep 4                   |                   |                        |
| 0             | D                 | 1.412     | 1.412      | 1.412                | 1.412                   |                   |                        |
| 6.25          |                   | 1.412     | 1,412      | 1.412                | 1.412                   |                   |                        |
| 12.5          |                   | 1.412     | 1.412      | 1.412                | 1.412                   |                   |                        |
| 25            |                   | 1.249     | 1.107      | 1.412                | 1.249                   |                   |                        |
| 50            |                   | 1.249     | 1.412      | 1.412                | 1.412                   |                   |                        |
| 100           |                   | 1.412     | 1.412      | 1.412                | 1.412                   |                   |                        |
| 48h Survival  | Rate Binomials    |           |            |                      |                         |                   |                        |
| Conc-%        | Code              | Rep 1     | Rep 2      | Rep 3                | Rep 4                   |                   |                        |
| 0             | D                 | 10/10     | 10/10      | 10/10                | 10/10                   |                   |                        |
| 6.25          |                   | 10/10     | 10/10      | 10/10                | 10/10                   |                   |                        |
| 12.5          |                   | 10/10     | 10/10      | 10/10                | 10/10                   |                   |                        |
| 25            |                   | 9/10      | 8/10       | 10/10                | 9/10                    |                   |                        |
| 50            |                   | 9/10      | 10/10      | 10/10                | 10/10                   |                   |                        |
| 100           |                   | 10/10     | 10/10      | 10/10                | 10/10                   |                   |                        |

## Graphics





### **CETIS Analytical Report**

Report Date: Test Code: 11 Jul-17 10:40 (p 1 of 2) 17-936b | 14-5186-2294

|  |        |   |                                     |                |                 |  |                  |                  |                |               |          | 1 1 0 100 EEC |
|--|--------|---|-------------------------------------|----------------|-----------------|--|------------------|------------------|----------------|---------------|----------|---------------|
| Inland Sil                             | versi  | de 96-h Acute S                                   | urvival Te                          | st             |                 |  |                  |                  |                | N             | ew Engla | and Bioassa   |
|  |        |   | 48h Survival Ra<br>Linear Interpola |                | ۷)              |  | TIS Version      |                  | .9.2           |               |          |               |
| Batch ID: 16-6034-2378 Test Type:      |        | pe: Survival (48h)<br>bl: EPA/821/R-02-012 (2002) |                                     |                | Dil             | Analyst: Diluent: Receiving Water Brine: |                  |                  |                |               |          |               |
|  |        | In-House Cultu                                    | lture Age: 10d                      |                |                 |  |                  |                  |                |               |          |               |
| Sample ID: 10-6666-1888 Code: 3F93F800 |        |   |                                     | Cli            | ent: Sp         | ectrum Analy                             | /tical           |                  |                |               |          |               |
| -                                      |        | 27 Jun-17 10:00                                   | Mat                                 | erial:         | Not Applicable  |  |                  | Pro              | oject:         |               |          |               |
| Receipt D                              |        |   |                                     | rce:           | Gulf Oil Termin | il Terminal (MA0001091)                  |                  |                  |                |               |          |               |
| Sample A                               | ge: 3  | 30h   | Stat                                | ion:           |                 |  |                  |                  |                |               |          |               |
| Linear Int                             | erpol  | ation Options                                     |                                     |                |                 |  |                  |                  |                |               |          |               |
| X Transfo                              | rm     | Y Transform                                       | See                                 |                | Resamples       | Exp 95%                                  |                  | ethod            |                |               |          |               |
| Log(X)                                 |        | Linear  | 1624                                | 4003           | 200             | Yes                                      | Tw               | o-Point Inte     | rpolation      |               |          |               |
| Point Esti                             | mate   | S   |                                     |                |                 |  |                  |                  |                |               |          |               |
| Level %                                |        | 95% LCL   | 95% UCL                             | TU             | 95% LCL         | 95% UCI                                  | -                |                  |                |               |          |               |
| LC50 >                                 | 100    | n/a   | n/a                                 | <1             | n/a             | n/a                                      |                  |                  |                |               |          |               |
| 48h Survival Rate Summary              |        |   | Calculated Variate(A/E              |                |                 | riate(A/B)                               |                  |                  |                |               |          |               |
| Conc-%                                 |        | Code  | Count                               | Mean           |                 | Max                                      | Std Err          |                  |                | %Effect       | Α        | В             |
| )                                      |        | D   | 4                                   | 1.000          |                 | 1.0000                                   | 0.0000           | 0.0000           | 0.00%          | 0.0%          | 40       | 40            |
| 6.25                                   |        |   | 4                                   | 1.000          |                 | 1.0000                                   | 0.0000           | 0.0000           | 0.00%          | 0.0%          | 40       | 40            |
| 12.5                                   |        |   | 4                                   | 1,000          |                 | 1.0000                                   | 0.0000           | 0.0000           | 0.00%          | 0.0%          | 40       | 40            |
| 25                                     |        |   | 4                                   | 0.900          |                 | 1.0000<br>1.0000                         | 0.0408<br>0.0250 | 0.0817<br>0.0500 | 9.07%<br>5.13% | 10.0%<br>2.5% | 36<br>30 | 40<br>40      |
| 50<br>100                              |        |   | 4                                   | 0.975<br>1.000 |                 | 1.0000                                   | 0.0230           | 0.0000           | 0.00%          | 0.0%          | 39<br>40 | 40            |
| 48h Survi                              | val Ra | ate Detail  |                                     |                |                 |  |                  |                  |                |               |          |               |
| Conc-%                                 |        | Code  | Rep 1                               | Rep 2          | Rep 3           | Rep 4                                    |                  |                  |                |               |          |               |
| )                                      |        | D   | 1,0000                              | 1.000          |                 | 1.0000                                   |                  |                  |                |               |          |               |
| 5.25                                   |        |   | 1,0000                              | 1.000          | 0 1.0000        | 1.0000                                   |                  |                  |                |               |          |               |
| 12.5                                   |        |   | 1,0000                              | 1,000          |                 | 1,0000                                   |                  |                  |                |               |          |               |
| 25                                     |        |   | 0.9000                              | 0.800          | 0 1.0000        | 0.9000                                   |                  |                  |                |               |          |               |
| 50                                     |        |   | 0.9000                              | 1,000          | 0 1.0000        | 1,0000                                   |                  |                  |                |               |          |               |
| 100                                    |        |   | 1.0000                              | 1.000          | 0 1.0000        | 1.0000                                   |                  |                  |                |               |          |               |
| 18h Survi                              | val Ra | ate Binomials                                     |                                     |                |                 |  |                  |                  |                |               |          |               |
| Conc-%                                 |        | Code  | Rep 1                               | Rep 2          | Rep 3           | Rep 4                                    |                  |                  |                |               |          |               |
| )                                      |        | D   | 10/10                               | 10/10          | 10/10           | 10/10                                    |                  |                  |                |               |          |               |
| 5.25                                   |        |   | 10/10                               | 10/10          | 10/10           | 10/10                                    |                  |                  |                |               |          |               |
| 12.5                                   |        |   | 10/10                               | 10/10          | 10/10           | 10/10                                    |                  |                  |                |               |          |               |
| 25                                     |        |   | 9/10                                | 8/10           | 10/10           | 9/10                                     |                  |                  |                |               |          |               |
| 50                                     |        |   | 9/10                                | 10/10          | 10/10           | 10/10                                    |                  |                  |                |               |          |               |
| 100                                    |        |   | 10/10                               | 10/10          | 10/10           | 10/10                                    |                  |                  |                |               |          |               |

### **CETIS Analytical Report**

Report Date:

11 Jul-17 10:40 (p 2 of 2)

**Test Code:** 

17-936b | 14-5186-2294

Inland Silverside 96-h Acute Survival Test

**New England Bioassay** 

Analysis ID: Analyzed:

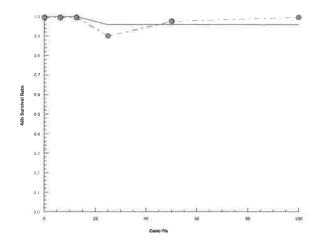
17-5418-9503 11 Jul-17 10:39

Endpoint: 48h Survival Rate

Analysis: Linear Interpolation (ICPIN) **CETIS Version:** CETISv1.9.2

Official Results: Yes

### Graphics



### INITIAL CHEMISTRY INFORMATION

 CLIENT:
 Gulf Oil Terminal - 003

 PROJECT #
 05.0045469.00

| RECIEPT DATE               | 6/28/17  |                 |  |  |  |
|----------------------------|----------|-----------------|--|--|--|
| SAMPLE                     | Effluent | Receiving Water |  |  |  |
| COC#                       | C37-2568 | C37-2569        |  |  |  |
| Temperature (°C)           | 6.4      | 9.1             |  |  |  |
| Dissolved Oxygen (mg/L)    | 7.6      | 9.6             |  |  |  |
| pH (standard units)        | 6.8      | 7.7             |  |  |  |
| Conductivity (µmhos/cm)    | 860      | 42,800          |  |  |  |
| Salinity (ppt)             | <1       | 27              |  |  |  |
| Hardness (as mg/L CaCO3)   | 126      | 4800            |  |  |  |
| Alkalinity (as mg/L CaCO3) | 85       | 95              |  |  |  |
| TRC - DPD (mg/L)           | 0.125    | 0.024           |  |  |  |
| INITIALS                   | СВ       | СВ              |  |  |  |

| Additional notes: |  |
|-------------------|--|
|                   |  |
|                   |  |
|                   |  |

# NEB SALTWATER SPEC 3 ACCLIMATION RECORD

| C   |                     |                   |                                       |
|---|---------------------|-------------------|---------------------------------------|
| Species: Client: Osery Utweet Took ID.                  | Client:             | Quantity:         | *Mortality upon arrival               |
|   | lest ID.            |                   |                                       |
| Source  | 14# Gen 45/100      | .000              | ~                                     |
| - T - T - T   | (12 9) (17) (SC 14) | שת נייני<br>שלו ה | 7                                     |
| Have the marcards                                       |                     | 9 days on 6-27-17 | * Mortality > 10% - Notify management |
| Allowable Mortality: > 5% mortality = Notify management | ntify management    | フ                 |                                       |

> 5% mortality = Notify management. Allowable Mortality:

Fish = No more than 50% tank volume water change over a 12 (twelve) hour period. Allowable Acclimation:

Mysids = Need to be +/- 2 ppt of test dilution water.

|                 | Comments / Treatment type            |   | Accumented to ASW.  6 L. ASW HZO A  6 L. ASW HZO A  6 L. ASW A Samuty quadwally adjusted to 15900. |
|-----------------|--------------------------------------|---|--|
|                 | Mortalities                          | # of dead organisms removed from tank       | F (O 0 0   |
| Observations    | Do<br>organisms<br>look<br>stressed? | Yes / No                                    | No<br>No<br>No   |
| Obser           | Behavioral<br>observations           | A = Normal,<br>B = Erratic mov.<br>C = Dead | X X X  |
|                 | Feedings                             | AM NOON PM                                  | 4+ AT MG 50 500 MC 4= 51P 51P AT 51P 51P AT  |
|                 | Sal.<br>(ppt)<br>**                  |   | 52 22 25   |
|                 | Alkal.<br>(mg/L)<br>ml titrant       |   | 20 ml 25 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2   |
| try             | Temp.<br>(C) *                       |   | 22.7   |
| Water Chemistry | p.H.<br>(SU)                         | n<br>V                                      | 8.   1   |
| Water           | D.O.<br>(mg/L)                       |   | 35 - 1 35  |
|                 | Date                                 | 2   | Sect 30  |



### SUBCONTRACT ORDER

SC36391

Spectrum Analytical

SENDING LABORATORY:

Eurofins Spectrum Analytical, Inc.

11 Almgren Drive Agawam, MA 01001 Phone: (413) 789-9018 Fax: (413) 789-4076

Project Manager: Dulce Litchfield

Project: Gulf Terminal - Chelsea, MA

RECEIVING LABORATORY:

GZA Geoenvironmental, Inc. - Manchester, CT

77 Batson Drive Manchester, CT 06042 Phone: (860) 286-8900 Fax: (860) 242-8389

Project #: Gulf Chelsea

PO Number: SC36391

BILL TO:

Eurofins Spectrum Analytical, Inc.

2425 New Holland Pike Lancaster, PA 17601

Attention: Accounts Payable accountspayable@eurofinsus.com

PO Number: SC36391

| Laboratory ID                  | Sample ID  | Sampled         | Matrix        | Analysis    | Due             | Comments                           |
|--------------------------------|------------|-----------------|---------------|-------------|-----------------|------------------------------------|
|                                | SC36391-01 | 27-Jun-17 10:00 | Surface Water | Aquatic Tox | 14-Jul-17 16:00 | Client ID is Chelsea<br>Creek/LC50 |
| Containers Supplied: Other (J) |            |                 |               | 037         | -2569           |                                    |

Please send notice within 24 hours of obtaining valid data, of the results of all drinking water samples that exceed any EPA or Department-established maximum contaminant level, maximum residual disinfectant level or reportable concentration. Notice should be emailed to <a href="mailto:SpectrumLabResults@EurofinsUS.com">SpectrumLabResults@EurofinsUS.com</a>.

Please notify <u>SpectrumLabResults@EurofinsUS.com</u> immediately and prior to conducting analysis if certification is not held for the analyses requested.

Please e-mail results in electronic format to SpectrumLabResults@EurofinsUS.com.

Received ON ICE

Released By

Date

Received By

Temp °

Released By Date Received By Date



### SUBCONTRACT ORDER

Spectrum Analytical

SC36392

**SENDING LABORATORY:** 

Eurofins Spectrum Analytical, Inc.

11 Almgren Drive Agawam, MA 01001 Phone: (413) 789-9018 Fax: (413) 789-4076

Project Manager: Dulce Litchfield

Project: Gulf Terminal - Chelsea, MA

RECEIVING LABORATORY:

GZA Geoenvironmental, Inc. - Manchester, CT\*

77 Batson Drive

Manchester, CT 06042 Phone: (860) 286-8900 Fax: (860) 242-8389 **BILL TO:** 

Eurofins Spectrum Analytical, Inc.

2425 New Holland Pike

Lancaster, PA 17601

Attention: Accounts Payable accountspayable@eurofinsus.com

PO Number: SC36392

Project #:

Sampled

Gulf Chelsea SC36392

PO Number:

8036303.01 37

Sample ID

SC36392-01 27-Jun-17 10:00

Matrix
Surface Water

Aquatic Tox

Analysis

14-Jul-17 16:00

Due

Client ID is Outfall

Comments

003/LC50

Containers Supplied:

Laboratory ID

Other (L)

C37-2568

Please send notice within 24 hours of obtaining valid data, of the results of all drinking water samples that exceed any EPA or Department-established maximum contaminant level, maximum residual disinfectant level or reportable concentration. Notice should be emailed to SpectrumLabResults@EurofinsUS.com.

Please notify <u>SpectrumLabResults@EurofinsUS.com</u> immediately and prior to conducting analysis if certification is not held for the analyses requested.

Please e-mail results in electronic format to SpectrumLabResults@EurofinsUS.com.

Received ON ICE

Released By

Date

eceived By

Date

Temp °C

Released By

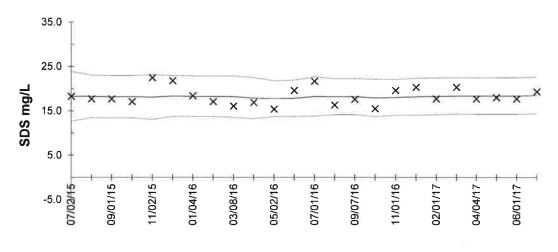
Date

Received By

Date

# New England Bioassay Reference Toxicant Data: *Mysidopsis bahia* 48-hour LC50

Reference Toxicant: Sodium Dodecyl Sulfate Test Dates: July 2015 - July 2017

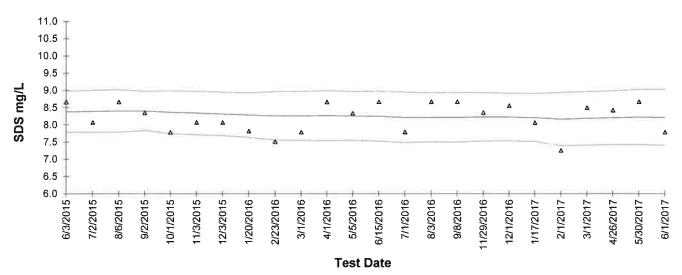


| × LC50 | Mean LC50 | ± 2 SD |
|--------|-----------|--------|

|         |           |                  |                       |     |       |       |      | CV National  |
|---------|-----------|------------------|-----------------------|-----|-------|-------|------|--------------|
| Test ID | Date      | LC <sub>50</sub> | Mean LC <sub>50</sub> | STD | -2STD | +2STD | CV   | 75th & 90th% |
| 15-900  | 7/2/2015  | 18.3             | 18.3                  | 2.8 | 12.7  | 23.9  | 0.15 | 0.26         |
| 15-1082 | 8/3/2015  | 17.7             | 18.3                  | 2.4 | 13,5  | 23.1  | 0.13 | 0.26         |
| 15-1296 | 9/1/2015  | 17.7             | 18.2                  | 2.4 | 13.4  | 23.0  | 0.13 | 0.26         |
| 15-1458 | 10/1/2015 | 17,1             | 18.2                  | 2.4 | 13.5  | 23.0  | 0.13 | 0.26         |
| 15-1687 | 11/2/2015 | 22.5             | 18.1                  | 2,5 | 13.1  | 23.2  | 0.14 | 0.26         |
| 15-1776 | 12/1/2015 | 21.8             | 18.4                  | 2.3 | 13.8  | 23.0  | 0.13 | 0.26         |
| 16-34   | 1/4/2016  | 18.4             | 18.3                  | 2.3 | 13.7  | 22.9  | 0.12 | 0.26         |
| 16-142  | 2/1/2016  | 17.1             | 18,3                  | 2.3 | 13.7  | 22.8  | 0.12 | 0.26         |
| 16-338  | 3/8/2016  | 16.1             | 18.2                  | 2.3 | 13.6  | 22.9  | 0.13 | 0.26         |
| 16-460  | 4/1/2016  | 16.9             | 17.9                  | 2.3 | 13.2  | 22.5  | 0.13 | 0.26         |
| 16-600  | 5/2/2016  | 15.4             | 17.8                  | 2.0 | 13.7  | 21.8  | 0.11 | 0.26         |
| 16-709  | 6/1/2016  | 19.6             | 17.9                  | 2.0 | 13.8  | 22.0  | 0.11 | 0.26         |
| 16-849  | 7/1/2016  | 21.7             | 18.3                  | 2.2 | 13.8  | 22.7  | 0.12 | 0.26         |
| 16-1058 | 8/1/2016  | 16.3             | 18.2                  | 2.0 | 14.1  | 22.2  | 0:11 | 0.26         |
| 16-1256 | 9/7/2016  | 17.6             | 18.2                  | 2.0 | 14.1  | 22.3  | 0.11 | 0.26         |
| 16-1471 | 10/5/2016 | 15.5             | 17.9                  | 2.1 | 13.7  | 22.1  | 0.12 | 0.26         |
| 16-1590 | 11/1/2016 | 19.6             | 18.0                  | 2.0 | 14.0  | 22.1  | 0.11 | 0.26         |
| 17-9    | 1/3/2017  | 20.3             | 18.2                  | 2.1 | 14.0  | 22.4  | 0.11 | 0.26         |
| 17-154  | 2/1/2017  | 17.7             | 18.3                  | 2.1 | 14.1  | 22.4  | 0.11 | 0.26         |
| 17-273  | 3/1/2017  | 20.3             | 18.4                  | 2.1 | 14.3  | 22.5  | 0.11 | 0.26         |
| 17-479  | 4/4/2017  | 17.7             | 18.4                  | 2.1 | 14.2  | 22.5  | 0.11 | 0.26         |
| 17-697  | 5/10/2017 | 18.0             | 18.4                  | 2.1 | 14.2  | 22.5  | 0.11 | 0.26         |
| 17-776  | 6/1/2017  | 17.7             | 18.4                  | 2.1 | 14.2  | 22.5  | 0.11 | 0.26         |
| 17-977  | 7/5/2017  | 19,3             | 18.5                  | 2.1 | 14.3  | 22.6  | 0.11 | 0.26         |

## New England Bioassay Reference Toxicant Data: *Menidia beryllina* 48-hour LC50

Reference Toxicant: Sodium Dodecyl Sulfate Test Dates: June 2015 - June 2017



| Δ | LC50 | —— Mean LC50 | +/- 2 STD   |             |
|---|------|--------------|-------------|-------------|
|   |      |              | CV National | CV National |

|         |  |   |  |   |  |  |   | CV Hational   | CV National  |
|---------|--|---|--|---|--|--|---|---|--|
| Test ID | Date   | LC <sub>50</sub>  | Mean LC <sub>50</sub>  | STD   | -2STD  | +2STD  | CV  | 75th%   | 90th%  |
| 15-705  | 6/3/2015   | 8.7   | 8.4  | 0.3   | 7.8  | 9.0  | 0.04  | 0,21  | 0.44   |
| 15-901  | 7/2/2015   | 8.1   | 8.4  | 0.3   | 7.8  | 9.0  | 0.04  | 0,21  | 0.44   |
| 15-1083 | 8/6/2015   | 8.7   | 8.4  | 0.3   | 7.8  | 9.0  | 0.04  | 0,21  | 0.44   |
| 15-1297 | 9/2/2015   | 8.4   | 8.4  | 0.3   | 7.8  | 9.0  | 0.03  | 0.21  | 0.44   |
| 15-1539 | 10/1/2015  | 7.8   | 8.4  | 0.3   | 7.7  | 9.0  | 0.04  | 0.21  | 0.44   |
| 15-1688 | 11/3/2015  | 8.1   | 8.3  | 0.3   | 7.7  | 9.0  | 0.04  | 0.21  | 0.44   |
| 15-1825 | 12/3/2015  | 8.1   | 8.3  | 0.3   | 7.7  | 8.9  | 0.04  | 0.21  | 0.44   |
| 16-108  | 1/20/2016  | 7.8   | 8.3  | 0.3   | 7.6  | 8.9  | 0.04  | 0.21  | 0.44   |
| 16-260  | 2/23/2016  | 7.5   | 8.3  | 0.4   | 7.6  | 9.0  | 0.04  | 0.21  | 0.44   |
| 16-303  | 3/1/2016   | 7.8   | 8,3  | 0.4   | 7.5  | 9.0  | 0.04  | 0.21  | 0.44   |
| 16-461  | 4/1/2016   | 8.7   | 8.3  | 0.4   | 7.5  | 9.0  | 0.04  | 0.21  | 0.44   |
| 16-602  | 5/5/2016   | 8.3   | 8.3  | 0.4   | 7.5  | 9.0  | 0.04  | 0.21  | 0.44   |
| 16-798  | 6/15/2016  | 8.7   | 8.2  | 0.4   | 7.5  | 9.0  | 0.04  | 0.21  | 0.44   |
| 16-850  | 7/1/2016   | 7.8   | 8.2  | 0,4   | 7.5  | 8.9  | 0.04  | 0.21  | 0.44   |
| 16-1060 | 8/3/2016   | 8.7   | 8.2  | 0.4   | 7.5  | 8.9  | 0.04  | 0.21  | 0.44   |
| 16-1282 | 9/8/2016   | 8.7   | 8.2  | 0.4   | 7.5  | 8.9  | 0.04  | 0.21  | 0.44   |
| 16-1705 | 11/29/2016   | 8.4   | 8.2  | 0.4   | 7.5  | 8.9  | 0.04  | 0.21  | 0.44   |
| 16-1739 | 12/1/2016  | 8.6   | 8.2  | 0.3   | 7.5  | 8.9  | 0.04  | 0.21  | 0.44   |
| 17-83   | 1/17/2017  | 8.1   | 8.2  | 0.3   | 7.5  | 8.9  | 0.04  | 0.21  | 0.44   |
| 17-155  | 2/1/2017   | 7.3   | 8.2  | 0.4   | 7,4  | 8.9  | 0.05  | 0.21  | 0.44   |
| 17-278  | 3/1/2017   | 8.5   | 8.2  | 0.4   | 7.4  | 9.0  | 0.05  | 0.21  | 0.44   |
| 17-595  | 4/26/2017  | 8.4   | 8.2  | 0.4   | 7.4  | 9.0  | 0.05  | 0.21  | 0.44   |
| 17-758  | 5/30/2017  | 8.7   | 8.2  | 0.4   | 7.4  | 9.0  | 0.05  | 0.21  | 0.44   |
| 17-777  | 6/1/2017   | 7.8   | 8.2  | 0.4   | 7.4  | 9.0  | 0.05  | 0.21  | 0.44   |
|         | 15-705<br>15-901<br>15-1083<br>15-1297<br>15-1539<br>15-1688<br>15-1825<br>16-108<br>16-260<br>16-303<br>16-461<br>16-602<br>16-798<br>16-850<br>16-1060<br>16-1282<br>16-1705<br>16-1739<br>17-83<br>17-155<br>17-278<br>17-595<br>17-758 | 15-705 6/3/2015 15-901 7/2/2015 15-1083 8/6/2015 15-1297 9/2/2015 15-1539 10/1/2015 15-1688 11/3/2015 15-1825 12/3/2015 16-108 1/20/2016 16-260 2/23/2016 16-303 3/1/2016 16-461 4/1/2016 16-602 5/5/2016 16-798 6/15/2016 16-798 6/15/2016 16-1060 8/3/2016 16-1282 9/8/2016 16-1282 9/8/2016 16-1705 11/29/2016 16-1705 11/29/2016 16-1739 12/1/2016 17-83 1/17/2017 17-155 2/1/2017 17-278 3/1/2017 17-595 4/26/2017 | 15-705         6/3/2015         8.7           15-901         7/2/2015         8.1           15-903         8/6/2015         8.7           15-1297         9/2/2015         8.4           15-1539         10/1/2015         7.8           15-1688         11/3/2015         8.1           15-1825         12/3/2015         8.1           16-108         1/20/2016         7.8           16-260         2/23/2016         7.5           16-303         3/1/2016         7.8           16-461         4/1/2016         8.7           16-602         5/5/2016         8.3           16-798         6/15/2016         8.7           16-850         7/1/2016         7.8           16-1060         8/3/2016         8.7           16-1282         9/8/2016         8.7           16-1705         11/29/2016         8.4           16-1739         12/1/2016         8.6           17-83         1/17/2017         8.1           17-155         2/1/2017         7.3           17-278         3/1/2017         8.5           17-595         4/26/2017         8.4           17-758         5 | 15-705         6/3/2015         8.7         8.4           15-901         7/2/2015         8.1         8.4           15-1083         8/6/2015         8.7         8.4           15-1297         9/2/2015         8.4         8.4           15-1539         10/1/2015         7.8         8.4           15-1688         11/3/2015         8.1         8.3           15-1825         12/3/2015         8.1         8.3           16-108         1/20/2016         7.8         8.3           16-260         2/23/2016         7.5         8.3           16-303         3/1/2016         7.8         8.3           16-461         4/1/2016         8.7         8.3           16-602         5/5/2016         8.3         8.3           16-798         6/15/2016         8.7         8.2           16-1060         8/3/2016         8.7         8.2           16-1282         9/8/2016         8.7         8.2           16-1705         11/29/2016         8.4         8.2           16-1739         12/1/2017         8.1         8.2           17-83         1/17/2017         8.1         8.2           17-278< | 15-705         6/3/2015         8.7         8.4         0.3           15-901         7/2/2015         8.1         8.4         0.3           15-1083         8/6/2015         8.7         8.4         0.3           15-1297         9/2/2015         8.4         8.4         0.3           15-1539         10/1/2015         7.8         8.4         0.3           15-1688         11/3/2015         8.1         8.3         0.3           15-1825         12/3/2015         8.1         8.3         0.3           16-108         1/20/2016         7.8         8.3         0.3           16-260         2/23/2016         7.5         8.3         0.4           16-303         3/1/2016         7.8         8.3         0.4           16-602         5/5/2016         8.7         8.3         0.4           16-798         6/15/2016         8.7         8.2         0.4           16-1060         8/3/2016         8.7         8.2         0.4           16-1705         11/29/2016         8.7         8.2         0.4           16-1739         12/1/2017         8.1         8.2         0.3           17-83         1/1 | 15-705         6/3/2015         8.7         8.4         0.3         7.8           15-901         7/2/2015         8.1         8.4         0.3         7.8           15-1083         8/6/2015         8.7         8.4         0.3         7.8           15-1297         9/2/2015         8.4         8.4         0.3         7.8           15-1539         10/1/2015         7.8         8.4         0.3         7.7           15-1688         11/3/2015         8.1         8.3         0.3         7.7           15-1825         12/3/2016         7.8         8.3         0.3         7.7           16-108         1/20/2016         7.8         8.3         0.3         7.6           16-260         2/23/2016         7.5         8.3         0.4         7.6           16-303         3/1/2016         7.8         8.3         0.4         7.5           16-461         4/1/2016         8.7         8.3         0.4         7.5           16-602         5/5/2016         8.3         8.3         0.4         7.5           16-798         6/15/2016         8.7         8.2         0.4         7.5           16-1282 <t< td=""><td>15-705         6/3/2015         8.7         8.4         0.3         7.8         9.0           15-901         7/2/2015         8.1         8.4         0.3         7.8         9.0           15-1083         8/6/2015         8.7         8.4         0.3         7.8         9.0           15-1297         9/2/2015         8.4         8.4         0.3         7.8         9.0           15-1539         10/1/2015         7.8         8.4         0.3         7.7         9.0           15-1688         11/3/2015         8.1         8.3         0.3         7.7         9.0           15-1825         12/3/2015         8.1         8.3         0.3         7.7         9.0           15-1825         12/3/2016         7.8         8.3         0.3         7.7         8.9           16-108         1/20/2016         7.8         8.3         0.4         7.6         9.0           16-303         3/1/2016         7.8         8.3         0.4         7.5         9.0           16-602         5/5/2016         8.7         8.3         0.4         7.5         9.0           16-798         6/15/2016         8.7         8.2         0.4<!--</td--><td>15-705         6/3/2015         8.7         8.4         0.3         7.8         9.0         0.04           15-901         7/2/2015         8.1         8.4         0.3         7.8         9.0         0.04           15-1083         8/6/2015         8.7         8.4         0.3         7.8         9.0         0.04           15-1297         9/2/2015         8.4         8.4         0.3         7.8         9.0         0.03           15-1539         10/1/2015         7.8         8.4         0.3         7.7         9.0         0.04           15-1688         11/3/2015         8.1         8.3         0.3         7.7         9.0         0.04           15-1825         12/3/2015         8.1         8.3         0.3         7.7         9.0         0.04           16-108         1/20/2016         7.8         8.3         0.3         7.6         8.9         0.04           16-260         2/23/2016         7.5         8.3         0.4         7.6         9.0         0.04           16-303         3/1/2016         7.8         8.3         0.4         7.5         9.0         0.04           16-461         4/1/2016         8.7</td><td>Test ID         Date         LC<sub>80</sub>         Mean LC<sub>80</sub>         STD         -2STD         +2STD         CV         75th%           15-705         6/3/2015         8.7         8.4         0.3         7.8         9.0         0.04         0.21           15-901         7/2/2015         8.1         8.4         0.3         7.8         9.0         0.04         0.21           15-1083         8/6/2015         8.7         8.4         0.3         7.8         9.0         0.04         0.21           15-1297         9/2/2015         8.4         8.4         0.3         7.8         9.0         0.03         0.21           15-1539         10/1/2015         7.8         8.4         0.3         7.7         9.0         0.04         0.21           15-1688         11/3/2015         8.1         8.3         0.3         7.7         9.0         0.04         0.21           15-1825         12/3/2016         7.8         8.3         0.3         7.7         8.9         0.04         0.21           16-108         1/20/2016         7.8         8.3         0.4         7.6         9.0         0.04         0.21           16-260         2/23/2016</td></td></t<> | 15-705         6/3/2015         8.7         8.4         0.3         7.8         9.0           15-901         7/2/2015         8.1         8.4         0.3         7.8         9.0           15-1083         8/6/2015         8.7         8.4         0.3         7.8         9.0           15-1297         9/2/2015         8.4         8.4         0.3         7.8         9.0           15-1539         10/1/2015         7.8         8.4         0.3         7.7         9.0           15-1688         11/3/2015         8.1         8.3         0.3         7.7         9.0           15-1825         12/3/2015         8.1         8.3         0.3         7.7         9.0           15-1825         12/3/2016         7.8         8.3         0.3         7.7         8.9           16-108         1/20/2016         7.8         8.3         0.4         7.6         9.0           16-303         3/1/2016         7.8         8.3         0.4         7.5         9.0           16-602         5/5/2016         8.7         8.3         0.4         7.5         9.0           16-798         6/15/2016         8.7         8.2         0.4 </td <td>15-705         6/3/2015         8.7         8.4         0.3         7.8         9.0         0.04           15-901         7/2/2015         8.1         8.4         0.3         7.8         9.0         0.04           15-1083         8/6/2015         8.7         8.4         0.3         7.8         9.0         0.04           15-1297         9/2/2015         8.4         8.4         0.3         7.8         9.0         0.03           15-1539         10/1/2015         7.8         8.4         0.3         7.7         9.0         0.04           15-1688         11/3/2015         8.1         8.3         0.3         7.7         9.0         0.04           15-1825         12/3/2015         8.1         8.3         0.3         7.7         9.0         0.04           16-108         1/20/2016         7.8         8.3         0.3         7.6         8.9         0.04           16-260         2/23/2016         7.5         8.3         0.4         7.6         9.0         0.04           16-303         3/1/2016         7.8         8.3         0.4         7.5         9.0         0.04           16-461         4/1/2016         8.7</td> <td>Test ID         Date         LC<sub>80</sub>         Mean LC<sub>80</sub>         STD         -2STD         +2STD         CV         75th%           15-705         6/3/2015         8.7         8.4         0.3         7.8         9.0         0.04         0.21           15-901         7/2/2015         8.1         8.4         0.3         7.8         9.0         0.04         0.21           15-1083         8/6/2015         8.7         8.4         0.3         7.8         9.0         0.04         0.21           15-1297         9/2/2015         8.4         8.4         0.3         7.8         9.0         0.03         0.21           15-1539         10/1/2015         7.8         8.4         0.3         7.7         9.0         0.04         0.21           15-1688         11/3/2015         8.1         8.3         0.3         7.7         9.0         0.04         0.21           15-1825         12/3/2016         7.8         8.3         0.3         7.7         8.9         0.04         0.21           16-108         1/20/2016         7.8         8.3         0.4         7.6         9.0         0.04         0.21           16-260         2/23/2016</td> | 15-705         6/3/2015         8.7         8.4         0.3         7.8         9.0         0.04           15-901         7/2/2015         8.1         8.4         0.3         7.8         9.0         0.04           15-1083         8/6/2015         8.7         8.4         0.3         7.8         9.0         0.04           15-1297         9/2/2015         8.4         8.4         0.3         7.8         9.0         0.03           15-1539         10/1/2015         7.8         8.4         0.3         7.7         9.0         0.04           15-1688         11/3/2015         8.1         8.3         0.3         7.7         9.0         0.04           15-1825         12/3/2015         8.1         8.3         0.3         7.7         9.0         0.04           16-108         1/20/2016         7.8         8.3         0.3         7.6         8.9         0.04           16-260         2/23/2016         7.5         8.3         0.4         7.6         9.0         0.04           16-303         3/1/2016         7.8         8.3         0.4         7.5         9.0         0.04           16-461         4/1/2016         8.7 | Test ID         Date         LC <sub>80</sub> Mean LC <sub>80</sub> STD         -2STD         +2STD         CV         75th%           15-705         6/3/2015         8.7         8.4         0.3         7.8         9.0         0.04         0.21           15-901         7/2/2015         8.1         8.4         0.3         7.8         9.0         0.04         0.21           15-1083         8/6/2015         8.7         8.4         0.3         7.8         9.0         0.04         0.21           15-1297         9/2/2015         8.4         8.4         0.3         7.8         9.0         0.03         0.21           15-1539         10/1/2015         7.8         8.4         0.3         7.7         9.0         0.04         0.21           15-1688         11/3/2015         8.1         8.3         0.3         7.7         9.0         0.04         0.21           15-1825         12/3/2016         7.8         8.3         0.3         7.7         8.9         0.04         0.21           16-108         1/20/2016         7.8         8.3         0.4         7.6         9.0         0.04         0.21           16-260         2/23/2016 |

| Page 1 of 1  Invoice To: Christopher Gill  Gulf Oil LP  80 William St, Suite 400  Wellesley, MA 02481-3705  Vellesley, MA 02481-3705  Vellesley, MA 02481-3705  Sampler(s):  P.O.No.  Onote/RQN:  P.O.No.  List Preservative Code I   | Date: Ime: # # # #   | 1000 G SW 1 ×  | Soll Stronge N2= N3= C=Compsite  C=Compsite  Time: Type  Matrix  = of VOA Vials  # of Clear Glass  # of Plastic  × Ammonia  |
|---|--|--|---|
| tered 1=Na <sub>5</sub> S2O <sub>5</sub> 2 HCl 3-H <sub>2</sub> SO <sub>4</sub> 4-HNO <sub>5</sub> 5-NaOH 6 Ascorbic Acid   | Ming Water GW=Groundwater SW=Surface Water WW=Waste Water SO Soil SI_Sludge A=Indoor/Ambient Air SG=Soil Gas  SI_Sludge A=Indoor/Ambient Air SG=Soil Gas  X2=  | so Soil SI_Sludge A=Indoor/Ambient Air SG_Soil Gas  SO Soil SI_Sludge A=Indoor/Ambient Air SG_Soil Gas  Somple ID:  C=Compsite  Type  Matrix  = of VOA Vials  # of Clear Glass  # of Plastic  X Ammonia  TRC, salinity, pH. TS, TSS  BTEX & naphthalene  PAHs  TOC  Total Recov. (Cd, Cu, Pb, Ni, Zn)*  LC50  Check if chlorinated   | inking Water GW=Groundwater SW=Surface Water WW=Waste Water  A=Indoor/Ambient Air SG=Soil Gas   |
| 8=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub>   H= none   3   11   2   11   10   4   Analysis   Analysis   | Type  Matrix  Type  Matrix  ToC  Total  Ph, N  LC50  | G. Grab  Sample ID:  Time:  Type  SW Matrix  = of VO  # of Am  # of Cle  TRC, s TSS  BTEX  PAHs  TOC  Total Pb, N  LC50  | NI NI SI SINGER NI SI SI SINGER NI SI   |
| 8=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  8=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  8=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  8=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  8=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  8=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  8=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  9=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  9=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  9=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  9=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  9=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  9=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  9=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  10=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  11=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  12=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  13=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  14=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= none  15=NaHSO <sub>4</sub> 9=Defonized Water 10=H <sub>3</sub> PO <sub>4</sub> II= |  | Sample ID: Date: 1 1 X   | C=Compsite Type Matrix of VO.   |
| NaHSO <sub>4</sub> 9=Deinnized Watter 10=H <sub>3</sub> PO <sub>4</sub> II= none  Soil SI_Sludge A=Indoor/Ambient Air SG_Soil Gas  Soil SI_Sludge A=Indoor/Ambient Air SG_Soil Gas  X2=   | Chelsea Creek  |  | Chelsea Creek   |
| Re NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  8 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  9 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  10 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  11 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  12 e NaHSO, 9=Deinnized Water 10=H <sub>3</sub> PO, 11= none  13  | Chelsea Creek 6-71 1000 G SW 3 X X X X X X X X X X X X X X X X X X   | 77 1000 6 SW 3 X   | Chelsea Creek 6-71 1000 G SW 3  |
| ge Waler (C. Grab Surface Water WW=Waste Water W  | Chelsea Creek 6-71 1000 G SW 3 X X Chelsea Creek 6-71 1000 G SW 3 X X X X X X X X X X X X X X X X X X  | 6-27 1000 6 sw 3   | Chelsea Creek 6-71 1000 G SW 3  Chelsea Creek 6-71 1000 G SW 3  Chelsea Creek 6-71 1000 G SW 1  |
| By Walter G.WGroundwater 10-H.pO <sub>4</sub> H= none  St. Sludge A=Indoor/Ambient Air SG-Soil Gas  So. Soil St. Sludge A=Indoor/Ambient Air SG-Soil Gas  Celsea Creek  Chelsea Cre  | Chelsea Creek 671 1000 G SW 1 X X G G Chelsea Creek 671 1000 G SW 3 X X G G G G G G G G G G G G G G G G G  | 6-27 1000 6 sw 3   | Chelsea Creek   |
| By Walto GW-Groundwater SW-Surface Water WW-Waste Water GG Soil St. Sludge A-Indoor/Ambient Air SG Soil Gas  SO Soil St. Sludge A-Indoor/Ambient Air SG Soil Gas  X2-   | Chelsea Creek  | 6-21 1000 6 SW 3   | Chelsea Creek   |
| Soul SI Sludge A Indoor/Ambuent Au SG Sulface Water Wa  | Chelsea Creek Ch |  | Chelsea Creek   |
| By Walter GW-Groundwater SW-Surface Water WW-Waste Water  Stample ID:  Sample ID:  Chelsea Creek  | Chelsea Creek Ch |  | Chelsea Creek   |
| ## ## ## ## ## ## ## ## ## ## ## ## ##  | Chelsea Creek  | helsea Creek         L71         1000         G         SW         3         X         X         A           helsea Creek         L71         1000         G         SW         1         X         X         IIII           helsea Creek         L71         1000         G         SW         2         1         X         X         IIII           helsea Creek         L71         1000         G         SW         1         1         X         X         IIII           helsea Creek         L71         1000         G         SW         1         1         X         X         IIII           helsea Creek         L71         1000         G         SW         1         1         X         X         IIII           helsea Creek         L71         1000         G         SW         1         1         X         X         IIII           helsea Creek         L71         1000         G         SW         1         1         X         X         IIII           helsea Creek         L71         1000         G         SW         1         1         X         X         IIII           hel | Chelsea Creek |

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| 1                                 | 1                           | Mark       | (AXC                                  | Reliphylshedry | ) |   | ( | 12                    |                         |                    |                                    |                               |                          | 3639201                     | Lab JD;                            | G= Grab    | NI=               | SO=Soil                       | DW-Dinking Water                    |                               | F=Field Filtered 1=Na<br>7=CH3OH 8=NaHSO <sub>4</sub>  | Project Mgr: | Telephone #  | Chelsea, MA 02150        | 281 Eastern Ave          | Gulf Oil LP      | Report To: Andrew Adams      | SPECTRUM AI<br>Fee<br>HANIBAL I   | 1,   |
|-----------------------------------|-----------------------------|------------|---------------------------------------|----------------|---|---|---|-----------------------|-------------------------|--------------------|------------------------------------|-------------------------------|--------------------------|-----------------------------|------------------------------------|------------|-------------------|-------------------------------|-------------------------------------|-------------------------------|--|--------------|--------------|--------------------------|--------------------------|------------------|------------------------------|---|--|
|                                   | 1                           | 2          | B                                     | City           |   |   |   | Outfall 003           | Outfall 003             | Outfall 003        | Outfall 003                        | Outfall 003                   | Outfall 003              | Outfall 003                 | Sample ID:                         | 5          | 320               | SL=Sludge A=Indoor/Ambient Au | GW=Groundwater SW=                  |                               | 1=Na <sub>2</sub> S2O <sub>3</sub> 2=HCl 3 H <sub>2</sub> SO <sub>4</sub><br>SO <sub>4</sub> 9=Deionized Water 10=H <sub>1</sub> PO <sub>4</sub> | Andrew Adams | 617.884.5980 | 2150                     | Ve                       |                  |                              | SPECTRUM ANALYTICAL, INC.  Featuring HANIBAL TECHNOLOGY   |  |
|                                   |                             | MAN        | nen                                   | Received by:   |   |   |   | 6-27                  | 6-27                    | 6-77               | 6-29                               | 1.2.9                         | 1.2-9                    | 12-9                        | Dates                              | C=Compsite | 2                 | SC                            | SW=Surface Water W                  |                               | 4=HNO <sub>3</sub>   |              |              |                          |                          |                  |                              |   |  |
|                                   |                             | B          | XX                                    | d by:          |   |   |   | (000)                 | 1000                    | 1000               | 1000                               | (000)                         | 1000                     | 1000                        | Time:                              | Ге         |                   | off Gaw                       | ww=Waste Water                      |                               | NaOH<br>none   | P.O No.      |              | 1.2                      | 1=                       |                  | Invoice To: Christopher Gill |   | CHAIN OF CUSTODY RECOR   |
|                                   |                             |            |                                       |                |   |   |   | G                     | G                       | G                  | G                                  | G                             | G                        | G                           | T                                  | ype        |                   |                               |                                     |                               | 6=Ascorbic Acid  |              |              | Wellesley, MA 02481-3705 | 80 William St, Suite 400 | Gulf Oil LP      | Christop                     | 7   | 0  |
|                                   | 1                           | 101        | 5                                     |                |   |   |   | WS                    | WS                      | WS                 | WS                                 | WS                            | WS                       | WS                          |                                    | atrix      |                   |                               | -                                   |                               | c Acid   |              |              | y, MA C                  | am St, S                 | P                | her Gill                     | Page  | FC   |
|                                   | 1                           | 10         | 1/8/2                                 | Date:          |   |   |   | 72                    |                         |                    | 3                                  |                               |                          |                             |                                    | VOA        |                   |                               |                                     |                               |  |              |              | 2481-3                   | uite 400                 |                  |                              | 1 0   | SU   |
|                                   |                             | 1          | 7                                     |                |   |   |   |                       | +                       | -                  | +                                  | -                             | -                        |                             | -                                  | Ambe       |                   |                               | Containers                          |                               |  | Quote/RQN    |              | 705                      |                          |                  |                              |   | TO   |
|                                   |                             | 500        | 1:00                                  | Time:          |   |   |   |                       | 4                       |                    |                                    |                               | _                        |                             |                                    | Plasti     | -                 |                               | iners                               |                               |  | Ž            |              |                          |                          |                  |                              | 2   | DYI  |
| No.                               | Course                      | Correct    | Constant of the second                | Te             |   |   |   |                       |                         |                    |                                    |                               |                          | ×                           | Amı                                | monia      |                   |                               |                                     | 3                             |  |              |              |                          |                          |                  |                              |   | RECO   |
| 5                                 | o Di                        | On Procher | 2                                     | Temp °C        |   |   |   |                       |                         |                    |                                    |                               | ×                        |                             | TRO                                |            | uity, į           | pH, TS,                       |                                     | =                             | 1  | '            |              | 1                        | 1                        | ,                | '                            |   | ORI  |
|                                   | Condu                       |            |                                       |                |   |   |   |                       |                         |                    |                                    | ×                             |                          |                             | 0&0                                | G          |                   |                               |                                     | 63                            | ist Pres   |              |              |                          |                          |                  |                              |   | 0  |
| mbient                            | ion upo                     |            | E-mail to:                            | EDD format:    |   |   |   |                       |                         |                    | ×                                  |                               |                          |                             | TBA                                |            |                   | a-lene,                       | Analysis                            | 2                             | ervativ  |              | Sampler(s):  | Location:                | SHE INAHE.               | Cita Nam         | Project No:                  |   |  |
| Ambient     leed                  | Condition upon receipt      |            |                                       | mat            |   |   |   |                       |                         |                    | ×                                  |                               |                          |                             | Viny                               |            | ride,             | MTBE -                        | sis                                 | 11                            | List Preservative Code below:  | î            | s):          | ı                        | 1                        |                  | 60:                          |   |  |
|                                   |                             |            | adams@                                |                |   |   |   |                       |                         | ×                  |                                    |                               |                          | _                           |                                    |            |                   | l phenol <sup>s</sup>         |                                     | =                             | below:   |              |              |                          |                          |                  |                              | S <sub>a</sub>  | St.  |
| Refrigerated                      | Custody Seals               |            | gulfoil.c                             |                |   |   |   |                       | ×                       | -                  |                                    |                               |                          |                             | TOO                                | al Coli    | form              |                               | +                                   | 10 4                          |  |              | 3            | 281 Eas                  | 1                        |                  |                              | TATs s<br>n. 24-h<br>mples di   | sh TAT   |
|                                   |                             |            | om, cgill                             |                |   | П |   | ×                     |                         |                    |                                    |                               |                          |                             |                                    |            | chlo              | rinated                       |                                     | 1                             |  |              | 2000         | tern Av                  | G                        | 0                |                              | notifica<br>sposed a  | Speci<br>FAT - 7   |
| ☐ Dì VOA Frozen ☐ Soil Jar Frozen | □ Present □ Intact □ Broken |            | aadams@gulfoil.com, egill@gulfoil.com |                |   |   |   | Group 2 PAHs - 5 µg/L | Group 1 PAHs - 0.1 µg/L | ethanol - 400 µg/L | naphthalene and vinyl chl - 5 µg/L | BTEX - 2 µg/L; TBA - 10 µg/L; | Required Minimum Levels: | * Report phenol down to MDL | State-specific reporting standards |            | ☐ ASP A* ☐ ASP B* | No QC                         | MA DEP MCP CAM Report? LI Yes LI No | anumonal charges may applying | QA/QC Reporting Notes:   |              | 1            | Chelsea                  | Gui Cheisea Feirillai    | Cholcoa Terminal | Gulf Chelsea                 | All TATs subject to laboratory approval Min. 24-hr notification needed for rushes Samples disposed after 60 days unless otherwise instructed. | Special Handling:  Standard TAT - 7 to 10 business days  Rush TAT - Date Needed: |

| Featuring  TANIBAL TECHNOLOGY | PECTRUM ANALYTICAL | 1 | 2 |  |
|-------------------------------|--------------------|---|---|--|
| *                             | INC.               |   |   |  |
|                               |                    |   |   |  |

# CHAIN OF CUSTODY RECORD

|                    |             | 6392 |
|--------------------|-------------|------|
| SISTAT - 7 to 10 h | Special Har | J Du |
| sylphese days      | idling:     | P    |

Rush TAT - Date Needed:

| 4                                 | 1                           | 2          | 1 de                                  | Reling            | ١ |   |             |             |               |                       | (2)                      | 101000            | 36397.1                     | Lab ID:    | G=                | =1X               | O=Oil SO=Soil                   | DW-Dinking Water     |          | F=Field Filtered 1 7=CH3OH 8=NaH8  | 1             | Telephone #:   | Chelsea, MA 02150        | 281 Eastern Ave          | Gulf Oil LP           | Report To: Andrew Adams      | SPECTRUN  |
|-----------------------------------|-----------------------------|------------|---------------------------------------|-------------------|---|---|-------------|-------------|---------------|-----------------------|--------------------------|-------------------|-----------------------------|------------|-------------------|-------------------|---------------------------------|----------------------|----------|--|---------------|--|--------------------------|--------------------------|-----------------------|------------------------------|---|
| 0                                 | 2                           | 3          | Coll .                                | Reliaquished by:7 |   |   |             |             |               |                       |                          | Outfall 003       | Outfall 003                 | Sample 1D: | G= Grab           | X2=               | SL. Sludge A Indoor/Ambient Air | GW=Groundwater SW=St |          | 8=NaHSO <sub>4</sub> 9=Deionized Water 10=H <sub>3</sub> PO <sub>4</sub> | Village M Cod | 617.884.5980   |                          | m Ave                    | 5                     | dams                         | SPECTRUM ANALYTICAL, INC. Featuring HANIBAL TECHNOLOGY  |
|                                   |                             | 1611       | Mary                                  | Beerived by:      |   |   |             |             |               |                       | •                        | 15-01             | 6-77                        | Date:      | C=Compsite        | X3=               | SG                              | SW=Surface Water WV  |          | 4-HNO <sub>3</sub>   | CINIC         |  |                          |                          |                       |                              | -1  |
|                                   | 1                           | M          | 1                                     | пру:              |   |   |             |             |               |                       |                          | 0000              | 1000                        | Time:      |                   |                   | I Gas                           | WW Waste Water       |          | S-NaOri a A  | 1             | PON  | <b> </b>                 | 180                      | Io                    | Invoice To: Christopher Gill |   |
|                                   |                             |            |                                       |                   |   |   |             |             |               |                       |                          | 6                 | 0                           |            | ype               |                   |                                 |                      |          | 12=  | o sandras     |  | /ellesley                | 80 William St, Suite 400 | Gulf Oil LP           | hristoph                     | Page  |
|                                   | 1                           | 6          | 6/2                                   | D                 |   |   | 4           |             | -             |                       |                          | WS                | WS                          |            | VOA               | Wals              |                                 |                      |          | - Country  | And           |  | , MA 02                  | n St, Su                 | P                     | er Gill                      | 2   |
|                                   | 1                           | 18         | CIP                                   | Date:             |   |   | -           |             |               | +                     |                          |                   |                             | -          | Ambe              | _                 |                                 |                      |          |  |               | 0110   | Wellesley, MA 02481-3705 | ite 400                  |                       |                              | Q,  |
|                                   | _                           | 7/         | 1                                     |                   |   |   | 1           |             |               |                       | $\wedge$                 |                   |                             | -          | Clear             | -                 | _                               | Containers           |          | !  | 100           | Ouote/RON  | 5                        |                          |                       |                              | 2   |
|                                   |                             | 100        | 00:00                                 | Time:             |   |   |             |             |               |                       | A                        | A                 | 4                           | # of       | Plasti            | c                 |                                 | iers                 |          |  |               | yo-  |                          |                          |                       |                              | 100   |
| Course                            | Cura Coura                  | Connection | Con Con                               | Temp °C           |   |   |             |             |               |                       |                          | 2                 | ×                           | Cu,        | al Rece<br>Pb, Ni |                   | d, Cr,                          |                      | none     |  |               |  |                          |                          |                       |                              |   |
|                                   | 3                           | Clive.     | N O                                   | ) Č               |   |   |             |             |               |                       |                          | ×                 |                             | LAS        | 50                | _                 |                                 |                      | F        | List P   |               | -  | +                        |                          | _                     |                              |   |
| ☐ Ambient ☐ Iced                  | Condition upon receipt      |            | E-mail to:                            | EDD format:       |   |   |             |             |               |                       |                          |                   |                             |            |                   |                   |                                 | or Change            | Analucie | List Preservative Code below:  |               | The state of the s | Location:                |                          | Site Name:            | Project No:                  |   |
|                                   |                             |            | aadams@gulfoil.com, cgill@gulfoil.com |                   |   |   |             |             |               |                       |                          |                   |                             |            |                   |                   |                                 |                      |          | e below:   |               |  | 281/E                    |                          |                       |                              | All TAT<br>Min. 24<br>Samples   |
| Refrigerated [                    | Custody Seals:              |            | oil.com, cgill@                       |                   |   | 0 |             |             |               |                       |                          |                   |                             |            |                   | chlor             | rinated                         | 1                    |          |  |               |  | 281 Eastern Ave, Chelsea |                          | Gulf Ch               | Gu                           | 's subject to lal<br>i-hr notification<br>disposed after  |
| ☐ Dì VOA Frozen ☐ Soil Jar Frozen | □ Present □ Intact □ Broken |            | gulfoil.com                           |                   |   |   | Zn - 5 µg/L | Cr - 1 µg/L | Cu - 0.5 µg/L | Cd, Pb, Ni - 0.2 ug/L | Required Minimum Levels: | **LC50 sub to GZA | * Report metals down to MDL |            | 11*               | ☐ ASP A* ☐ ASP B* | QA*                             | RCP Report?          | Yes   No | * additional charges may appply  |               |  | Cheisea State: MA        |                          | Gulf Chelsea Terminal | Gulf Chelsea                 | All TATs subject to laboratory approval Min. 24-hr notification needed for rushes Samples disposed after 60 days unless otherwise instructed. |

### **Batch Summary**

'[none]'

Subcontracted Analyses

SC36391-01 (Chelsea Creek)

SC36392-01 (Outfall 003)

1710945

Microbiological Analyses

SC36392-01 (Outfall 003)

1710957

General Chemistry Parameters

1710957-SRM1

1710957-SRM2

SC36391-01 (Chelsea Creek)

SC36392-01 (Outfall 003)

<u>1710965</u>

Total Metals by EPA 200/6000 Series Methods

SC36391-01 (Chelsea Creek)

SC36392-01 (Outfall 003)

<u>1711007</u>

**General Chemistry Parameters** 

1711007-BLK1

1711007-BS1

1711007-DUP1

SC36391-01 (Chelsea Creek)

SC36392-01 (Outfall 003)

1711008

**General Chemistry Parameters** 

1711008-BLK1

1711008-BS1

SC36391-01 (Chelsea Creek)

SC36392-01 (Outfall 003)

<u>1711096</u>

Semivolatile Organic Compounds by GCMS

1711096-BLK1

1711096-BLK2

1711096-BS1

1711096-BS2

1711096-BSD1

1711096-BSD2

SC36391-01 (Chelsea Creek)

SC36392-01 (Outfall 003)

SC36392-01RE1 (Outfall 003)

1711116

**Volatile Organic Compounds** 

1711116-BLK1

1711116-BLK2

1711116-BS1

1711116-BS2

1711116-BSD1

1711116-BSD2

SC36391-01 (Chelsea Creek)

SC36392-01 (Outfall 003)

<u>1711119</u>

**General Chemistry Parameters** 

1711119-BLK1

1711119-BS1

1711119-SRM1

SC36391-01 (Chelsea Creek)

SC36392-01 (Outfall 003)

<u>1711426</u>

**General Chemistry Parameters** 

1711426-DUP1

1711426-SRM1

1711426-SRM2

SC36391-01 (Chelsea Creek)

SC36392-01 (Outfall 003)

<u>1711573</u>

General Chemistry Parameters

1711573-BLK1

1711573-BS1

1711573-CCB1

1711573-CCB2

1711573-CCB3

1711573-CCB4

1711573-CCB5

1711573-CCV1

1711573-CCV2

1711573-CCV3

1711573-CCV4

1711573-CCV5

1711573-SRM1

SC36391-01 (Chelsea Creek)

SC36392-01 (Outfall 003)

392124A

Subcontracted Analyses

BY50548-BLK

BY50548-DUP

BY50548-LCS

BY50548-MS

SC36391-01 (Chelsea Creek)

SC36392-01 (Outfall 003)

### 393336A

Subcontracted Analyses

BY50549-BLK

BY50549-LCS

SC36392-01 (Outfall 003)

### S703654

Semivolatile Organic Compounds by GCMS

S703654-CAL1

S703654-CAL2

S703654-CAL3

S703654-CAL4

S703654-CAL5

S703654-CAL6

S703654-CAL7

S703654-CAL8

S703654-CAL9

S703654-CALA

S703654-CALB

S703654-ICV1

S703654-LCV1

S703654-LCV2

S703654-TUN1

### S705262

Semivolatile Organic Compounds by GCMS

S705262-CAL1

S705262-CAL2

S705262-CAL3

S705262-CAL4

S705262-CAL5

S705262-CAL6

S705262-CAL7

S705262-CAL8

S705262-CAL9

S705262-CALA

S705262-ICV1

S705262-LCV1

S705262-LCV2

S705262-LCV3

S705262-TUN1

### S705740

### Volatile Organic Compounds

S705740-CAL1

S705740-CAL2

S705740-CAL3

S705740-CAL4

S705740-CAL5

S705740-CAL6

S705740-CAL7

S705740-CAL8

S705740-CAL9

S705740-CALA

S705740-CALB

S705740-ICV1

S705740-LCV1

S705740-LCV2

S705740-TUN1

### S705799

General Chemistry Parameters

S705799-CAL1

S705799-CAL2

S705799-CAL3

GE05500 GAT

S705799-CAL4

S705799-CAL5

S705799-CAL6

7703777 CILE

S705799-CAL7

S705799-CAL8

S705799-ICB1

S705799-ICV1

### S705898

**Volatile Organic Compounds** 

S705898-CCV1

S705898-TUN1

### S706037

Semivolatile Organic Compounds by GCMS

S706037-CCV1

S706037-TUN1

### S706180

Semivolatile Organic Compounds by GCMS

S706180-CCV1

S706180-TUN1

### S706181

Semivolatile Organic Compounds by GCMS

S706181-CCV1

S706181-TUN1

### S706219

Semivolatile Organic Compounds by GCMS

S706219-CCV1

S706219-TUN1